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J. R. Wittenborn and Others

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A STUDY OF ADOPTIVE CHILDREN

I. Interviews as a Source of Scores for Children and Their Homes

II. The Predictive Validity of the Yale Developmental Examination of Infant Behavior

III. Relationships Between Some Aspects of Development and Some Aspects of Environment for Adoptive Children

By

J. R. Wittenborn

Rutgers University

With the collaboration of:

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A Study of Adoptive Children: I. Interviews as a Source of Scores for Children and Their Homes[1]

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Introduction

This report has its origin in a much larger investigation of adoptive children. Our major investigation was a repeat or follow-up study of children who were examined in infancy at the Yale Clinic of Child Development.[2] In general, our major study was concerned with two questions:

1. How accurately and in what respects can the Yale Developmental Examination of infant behavior (6)[3] be employed to predict future development of adoptive children?

2. What characteristics of adoptive homes (placements) may be shown to be correlated with characteristics of adoptive children?

In order to answer these questions in as dependable a manner as possible, it was decided to use two samples of adoptive children. One sample included 114 children who were about five years of age at the time of our follow-up inquiry but who had not yet become involved in the work of the first grade. The second sample included 81 children who were past the first grade but were not yet preadolescent in their development.

It is obvious that a study of Questions 1 and 2 requires the employment of three classes of information: information emerging from the infant examination, information descriptive of the

[1] The staff of the project wishes to express its appreciation to Dr. Donald Young, Director of the Russell Sage Foundation, and to Dr. Carl Hovland and Dr. Milton Senn of Yale University. The nature and the quality of this effort have been greatly influenced by such friends and advisers as Dr. Joseph Baldwin, Dr. Nancy Bayley, Dr. Harold Jones, Dr. Neal Miller, Dr. Robert Sears, and Dr. Helen Thompson. We are indebted also to Dr. Leonard Cottrell, Dr. Liselotte Fischer, Dr. Else Frenkel-Brunswik, Dr. Marjorie Honzik, Dr. Mary Cover Jones, Dr. Frederick Mosteller, and Dr. A. J. J. Van Woerkom. We are particularly grateful to the adoptive families who participated in this investigation, the child placement agencies who cooperated with us and guided our efforts, and to Adelaide Piscitelli, David Macklin, David Jenkins, and Peter Field who helped in the analysis of the data and the preparation of the manuscript.

[2] The Yale Clinic of Child Development (housed in the Institute of Human Relations, Yale University) is now known as the Yale Child Study Center.

[3] References for the present report are listed on page 58.

child's development at the time of our inquiry, and information descriptive of various facets of the child's environment. Measures for various facets of the infant examination procedure were available from the filed infant examination protocols. Satisfactory measures of the child's scholastic and mental development can readily be incorporated in almost any kind of follow-up study. The same may be said for certain gross aspects of physical development. Unfortunately, from the standpoint of personality development there were no convenient measuring devices for our children. Moreover, no convenient and satisfactory measuring devices were available for a broad description of the children's environment.

In this connection we emphasize the word "convenient"; rating and observational procedures are available for children, but they are too conspicuous, time-consuming, or demanding of the subject to lend themselves to the purposes of our investigation. Adoption is not casually regarded in our society, and the adoptive status of children and families is either a family secret or a tenderly regarded circumstance. As a consequence, follow-up examinations of adoptive children and parents must be conducted not only with the confidence and cooperation of the subjects but must be of such a nature as to offer no threat to the subject's peace of mind. It is obvious, therefore, that for our study repeated visits to the home, ratings in the school situation, and series of examinations were out of the question. Procedures for studying adoptive children must be particularly facile and inoffensive. The emphasis on speed and convenience was especially critical for us. Our adoptive families were widely scattered over Connecticut and, since in many cases the day available for examination was of necessity largely devoted to travel, our examination procedure had to be agreeably efficacious.

Our total approach to the investigation was such that we could arrange for two opportunities to get information descriptive of the home. One of these opportunities was the occasion of our social worker's visit to the home (at which time she indicated the nature of the cooperation we desired of the adoptive family and made provision for the mother and child to call at the Institute of Human Relations to participate in the follow-up examination for the child). Our second opportunity to acquire information came at the time of the child's examination. It was planned that a standard, semistructured interview would be conducted with the mother by one psychologist member of the staff while the psychological examinations of the child were being conducted by another staff member.

Incidentally, it was anticipated that the interview with the mother could be conducted in such a fashion as to produce much material descriptive of the child's personal development and general behavior, particularly as it is related to the home.

It appeared, therefore, that it would be possible for us to gather the kinds of information that would be essential to our investigation. Our problem then became one of how best to use such information in a convenient, dependable, and understandable form. In effect, our problem became one of *how to score an interview.*

We decided that a defensible scoring procedure would be possible if, during the course of the interview, answers to a standard set of questions were recorded. If such answers could be secured without explicitly asking the questions, presumably the answers would be little biased by the interviewee's possible awareness of our specific interests. If such answers (bits of information) could be recorded in standard form, possibly the material could be scored for several different modes of response or classes of information, e.g., in much the same fashion as personality questionnaires are scored. What was needed was a basis for scoring. It was decided that the basic scoring distinctions should emerge from the employment of a twofold criterion. Specifically, *bits of information could contribute to a given score if they were*

positively interrelated, and if they appeared to have a similar behavioral significance. In establishing the scoring procedure, each of the various bits of information emerging from the interview could be correlated with every other one, and clusters or groups of information could be defined by combining the bits of information which were positively correlated with each other. As a second step, bits of information so grouped could be scrutinized and any bit which in its behavioral significance seemed to be inconsistent with the group could be eliminated.

In this way, bits of information were assigned to groups so that all the bits comprising a group were positively interrelated and had similar behavioral implications. As a consequence, it became a simple matter to score the interview of a given person for each of the groups or clusters. A given person's score for any given group or cluster was simply the number of component bits of information which appeared in his interview record.

As an incidental methodological point, it should be noted that negative correlations were never a basis for including a bit of information in a group or cluster, and that all bits of information that did not show a larger number of significant correlations with the other bits than could be accounted for on the basis of chance alone were automatically excluded from further consideration.

We can discuss the principle of scoring interrelated bits of information in terms of its implications for the total score. Although evidence that the component bits are consistently interrelated is an incidental evidence that the total score may be reliable, this is not the sole or even the principal value of using interrelated bits. It is possible that the principal value of scores that are built on consistently interrelated bits of information lies in the fact that the meaning of such scores is not likely to depend greatly upon the particular combination of items that happens to contribute to the total score for a particular individual. Scores based on bits of information that are known to be positively interrelated are preferable to scores based on bits of information combined on an a priori basis and without empirical evidence of internal consistency.

As an additional means of getting information relevant to the children's adjustment, an interview was planned for the children. Since more or less spontaneous and continuous discussion is often difficult with young children, no attempt was made to employ the semistructured interview with its avoidance of specific questions. Instead, a standard question-and-answer interview was planned for the children. It was hoped that such an interview (we called this a Social Reaction Interview) would provide useful information about the children's values and opinions of their own roles and reactions. The data from such an interview emerge in the form of numerous bits of information and lend themselves very well to a cluster-scoring procedure.

In the following sections the procedure for forming scores on the basis of interrelated bits will be applied in four different respects. In each instance the major application will be with our younger sample of children, but the results will be described also for our older sample. The respects in which we apply the cluster scoring principle may be briefly listed:

1. *Scores based on the Social Reaction Interview.* This interview was rigidly

structured and comprised a series of "What would you do if—" questions which a psychologist asked each child at the time of our follow-up study.

2. *Scores descriptive of the child based on the mother's Child-Rearing Practices Interview.* In our Child-Rearing Practices Interview with the mother a number of areas were introduced for discussion, but specific questions were generally avoided. Nevertheless, the interviewer sought and recorded specific bits of information descriptive of the child. These bits of information provided scores which described the child as seen by the mother, a very important descriptive feature of the adoptive child.

3. *Scores descriptive of the environment based on the mother's Child-Rearing Practices Interview.* Much of the psychologist's interview with the mother was descriptive of the psychological environment which the home provided for the child. This information, although not sought by explicit questioning, was recorded in standard form and provided the basis for a cluster-scoring procedure.

4. *Other scores descriptive of the home (Conditions of Child Rearing).* As a preparation for the visit of the mother and the child to the Institute of Human Relations, our social worker visited the home and on the basis of this visit gathered numerous bits of information in standard form. At the time the mother brought the child in for follow-up examination, the values and the organization of the home were the subject of discussion with the psychologist and additional bits of information were gathered in standard form. This body of information, emerging both from the social worker's visit and from the psychologist's interview, provided the basis for additional cluster scores which were primarily descriptive of the home, its organization and values.

Scores Based on the Social Reaction Interview

In Appendix A will be found a series of questions which ask the child what he would do in certain standard situations, for the most part situations familiar to him. The procedure was one wherein the question was asked by the examiner and the child's response was classified under the alternatives which had been set up during our preliminary pretesting work. The children responded to this series of questions with promptness and pleasure. It cannot be claimed that children's replies describe their behavior, but sensible and socially acceptable replies by a child indicate that he knows what society expects of him and that he is willing to say this in the context of the interview. There are numerous alternative responses to each question; some of them may have a wide and general acceptance as proper in our society. Presumably this procedure would reveal great differences, if they exist, in the children's system of values or ideas concerning appropriate behavior. Such verbalizations are not irrelevant. For example, most of the behavior difficulties that adults bring into the clinic and much of the psychotherapeutic procedure that is employed there concern how an individual feels he would or should react in common situations.

The Social Reaction Interviews for 100 children from our younger sample were reviewed and it was found that 111 response items occurred with sufficient frequency to justify further scrutiny. Accordingly, each of these items was correlated with every other one and the in-

tercorrelations were examined for clustering tendencies. As a result of such examination, several clusters of items with common behavioral implications were discernible. For the most part, items that have generally high correlations were excluded because of the difficulty of assigning them to any particular cluster; and items which are correlated with only one or two other items were excluded, because their relevance to any one cluster was not sufficiently general. (In addition, the reliability of such items, as inferred from the correlations, was questioned.) It should be emphasized that after the groupings of items were formed on the empirical basis of positive intercorrelations, the items were scrutinized from a rational standpoint and the intercorrelated items that did not plausibly go together (i.e., which could not be conceptualized as being evidence of a common form of behavior) were excluded from the clusters. Eventually it was possible to organize groups of items that were positively interrelated with each other, not importantly related with numerous items in another group, and that also had a plausible, common core of meaning or inferable behavioral relevance.

After such clusters were established for the younger sample, it was possible to score the Social Reaction questions for all of our children on the basis of each of these clusters. Such scores then would express the degree to which the kind of behavior implied by a cluster was characteristic of a child. Perhaps it is better to describe these scores as extensive scores rather than intensive scores. They do not imply how intense or severe any one response of a child may be, but instead indicate how general or pervasive a given kind of response is for each child.

Tables 1 through 6 are descriptive of each of the clusters which were derived from the Social Reaction Interview with the younger children. These tables indicate the general nature of the items and also the degree to which the items in the various clusters are intercorrelated with each other. The interested reader may examine the meaning of the items more fully by referring to the Social Reaction questions in Appendix A. The intercorrelations among the various scales or cluster scores derived from the Social Reaction Interview are presented in Table 7.

The reader may question the nature of the cluster scores. The meaning of the cluster scores is an inference based upon the nature of the items which comprise the cluster. Perhaps each of these clusters may have a slightly different meaning for different readers. Although we attempt to verbalize our conceptualizations of these clusters in the paragraphs to follow, the reader is free to conceptualize them differently if he so desires. This feature is not unique to our cluster scores. People conceptualize the meaning of intelligence test scores differently, too. It should be noted that all of these intercorrelations are based upon a relatively small sample and are, of course, subject to the kinds of sampling fluctuation that ordinarily characterize such data. Accordingly, the reader should not hasten to ascribe some unique significance to the highest correlation, nor to feel that a zero or slightly negative correlation is necessarily contrary to the general implications of the positive interrelationships.

It may be suspected that we have built our clusters adventitiously on the basis of correlations that emerged largely as

the result of sampling factors, and that one should be most hesitant in accepting intercorrelations among these items as an evidence for their behavioral similarity. Actually, however, all the items that appear in our cluster scores showed many more large correlations with the other items in the Social Reaction Interview than reasonably could be anticipated on the basis of chance alone. As a matter of fact, the appearance of consistently interrelated bits of information is important evidence that the bits so interrelated are not combined on the basis of chance. Consistency and randomness simply do not go together.

Some of the clusters are of sufficient intrinsic interest to justify a few words of discussion. For example (see Table 1), *Dependence on Adults* is remarkable in that all of the items describe a similar type of response, although the various situations that motivate or cue the responses are seemingly different from each other. The consistency of this form of behavior or attitude is indicated by the positive intercorrelations among the items.

The cluster in Table 2, which we have called *Aggression*, comprises ten items which may be seen by many readers to have aggressive implications. It is quite possible, however, that other readers will be impressed with the general implication of strong will or insistence on carrying out one's own plan that is inherent in most of these responses. It seems in general, however, that more than stubbornness or strong will is implied by these items. For example, many of them imply a readiness to employ action that will be contrary to the wishes of others and possibly punitive in nature. In Table 2 we find a *question mark* in one of the cells; question marks will be found in several of the tables. These question marks are due to the fact that in some instances the marginal frequencies in our fourfold tables were of such a nature as to make the determination of the tetrachoric correlation coefficients quite uncertain (we used computing diagrams). Accordingly, we include a question mark in our table.

Although there are relatively high intercorrelations among the items comprising the cluster shown in Table 3, the term *Socialized Compliance* may not be equally agreeable to all readers. Some may see neatness in personal relations or avoidance of differences with others as the underlying component in these responses. Still others may be inclined to say that the responses merely indicate a goody-good pattern of verbalization. Although these alternative interpretations may have merit, it seems that no great stretch of imagination is required to describe these various responses as involving compliance, on the verbal level at least, with some of the polite expectations for children in middle-class Western society.

The intercorrelations for the items comprising Table 4 are not uniformly high, but on the whole they indicate that there is some empirical similarity among them. It seemed to us, at least, that from a rational standpoint these items have something in common that involves doing the kind of thing that responsible adults might do in a child's view of adults. The responses imply a certain quality of concern with others which many fortunate children have known in the behavior of adults. We call this cluster *Taking an Adult Role*.

We have designated the cluster in Table 5 as *Weakness-Avoidance*. It is not very good from the empirical standpoint; some of the interrelationships could not be quantified because the marginal frequencies made the determination of the tetrachoric coefficients quite uncertain. In addition, there are several zero correlations. Nevertheless, it seems desirable to us to take this opportunity to form a score which might indicate weak, avoidant, hopeless, or futile attitudes on the part of a child.

The cluster in Table 6 provides a basis for a *Constructive Approach* variable. In its apparent implications it is similar to and empirically highly correlated with some of the other clusters, particularly the *Taking an Adult Role* cluster.

The intercorrelations among these various cluster scores are shown in Table 7. It is quite evident from Table 7 that, although they involve few overlapping items, these cluster scores are far from independent of each other. The most conspicuous evidence of relationship is the one between *Constructive Approach* and *Taking an Adult Role*. It appears that *Socialized Compliance*, *Constructive Approach*, and *Taking an Adult Role* are all fairly well intercorrelated. It is quite interesting to note that there is an inverse relationship between *Dependence on Adults* and *Aggression*, and that the correlations imply that

TABLE 1

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "DEPENDENCE ON ADULT"

(Social Reaction Interview, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number															
			6*d*	8*c*	1*c*	2*e*	6*b*	7*b*	8*b*	9*d*	1*d*	3*h*	4*d*	6*d*	8*b*	2*c*	3*b*	1*b*	2*b*
Dependency																			
6*d*	Tell adult if toy breaks	24	—																
8*c*	Tell adult if he hurts himself	45	.63	—															
Aggression																			
1*c*	Ask if he wants friend's toy	34	.07	.32	—														
2*e*	Tell adult if child won't let him play with his toys	11	.35	.29	.20	—													
6*b*	Tell adult if child hits him	38	.53	.32	.14	.50	—												
7*b*	Tell adult if child takes his toy	40	.50	.47	.43	.72	.66	—											
8*b*	Tell adult if child calls him names	40	.50	.25	.10	.34	.71	.76	—										
Submission																			
9*d*	Tell adult if children won't let him play with them	17	.23	.13	.21	.80	.35	.70	.50	—									
Sympathy																			
1*d*	Tell adult if child hurts himself	33	.55	.29	.13	.32	.68	.58	.52	.25	—								
3*h*	Tell adult if children hit another child	30	.40	.25	.42	.50	.47	.67	.55	.48	.70	—							
4*d*	Tell adult if small child is crying	30	.34	.18	.30	.24	.50	.50	.50	.52	.70	.75	—						
6*d*	Tell adult if child breaks his toy	18	.48	.19	.10	.34	.40	.45	.52	.48	.48	.70	.62	—					
8*b*	Tell adult if bird is hurt	15	.30	.45	.10	.07	.35	.62	.51	.47	.53	.40	.40	.32	—				
Cleanliness																			
2*c*	Tell adult if ice cream gets on clothes	19	.45	.40	.41	.57	.25	.58	.40	.64	.36	.50	.40	.62	.53	—			
3*b*	Tell adult if ball falls in garbage can	13	.60	.13	.09	.12	.37	.20	.20	.43	.32	.27	.49	.40	.20	.37	—		
Sex																			
1*b*	Tell adult if girl pulls up dress	22	.45	.00	.12	.25	.46	.65	.50	.38	.33	.62	.62	.54	.35	.41	.63	—	
2*b*	Tell adult if boy pulls down pants	29	.43	.00	−.07	.51	.57	.75	.52	.51	.41	.55	.55	.55	.31	.16	.50	.92	—
Toilet																			
1*c*	Tell adult if child wets his pants	44	.50	.27	.34	.54	.52	.68	.52	.34	.56	.70	.60	.82	.26	.50	.50	.86	.89

TABLE 2

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "AGGRESSION"

(Social Reaction Interview, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number								
			3*e*	4*e*	5*f*	6*a*	7*c*	8*a*	8*c*	7*f*	8*g*
Aggression											
3*e*	Go anyway if father breaks promise to take him to circus	16	—								
4*e*	Get ice cream anyway if mother says he can't have it	18	.76	—							
5*f*	Tell child to leave if everyone plays with child and ignores him	12	.20	.15	—						
6*a*	Hit child back if he hits him	37	.50	.33	.20	—					
7*c*	Take back his toy if another child takes it	24	.26	.30	.17	.26	—				
8*a*	Hit child who calls him a bad name	14	.13	.47	.40	.42	.22	—			
8*c*	Say something bad to child who calls him a bad name	22	.20	−.12	.32	.40	.37	?*	—		
Submission											
7*f*	Wouldn't go last if friends said his turn was last	11	.24	.20	.09	.11	.05	.10	.25	—	
8*g*	Get another friend if mother objected to one he likes	13	.41	.40	.10	.39	−.20	.38	.00	−.10	—
Sympathy											
3*f*	Hit children if they hit another child	17	.04	−.01	.00	.38	.22	.25	.39	.03	.29

* A "?" signifies that the frequencies of the two responses were such as to make the estimation of their coefficient quite uncertain.

Taking an Adult Role **involves an aggressive attitude. Although these intercorrelations and the items that provide a basis for them are of intrinsic interest and will justify further discussions in some** later report, perhaps little more need be said about them at this time.

When confronted with a new scoring device or measuring procedure, one must not permit the interest of the content to

TABLE 3

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "SOCIALIZED COMPLIANCE"

(Social Reaction Interview, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number								
			2*g*	5*a*	1*b*	5*b*	7*a*	8*c*	9*c*	1*f*	7*h*
Aggression											
2*g*	Play with his own toys if other child won't let him play with his	26	—								
5*a*	Play alone if everyone plays with other child and not with him	12	.50	—							
Submission											
1*b*	Eat food he doesn't like	35	.00	.35	—						
5*b*	Give toy to other child if mother tells him to	47	.12	.42	.60	—					
7*a*	Go last if friends say his turn is last	31	.25	.41	.56	.63	—				
8*c*	Wouldn't play with child if mother tells him not to	37	.20	.32	.41	.54	.46	—			
9*c*	Play with someone else if other children won't let him play	17	.40	.32	.30	.30	.30	.37	—		
Sympathy											
1*f*	Help child who has hurt himself	40	.20	.15	.34	.40	.26	.35	.22	—	
7*h*	Assist or be quiet if mother is sick	31	.24	.04	.09	.50	.10	.34	.29	.40	—
Miscellaneous											
4*i*	Feel grown up if he were suddenly grown up	12	.12	.12	.59	.55	.03	.43	.32	.40	.63

TABLE 4

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "TAKING AN ADULT ROLE"

(Social Reaction Interview, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number								
			8c	1f	3f	4e	6g	2b	1a	2a	1b
Aggression											
8c	Say something bad to child who calls him a bad name	22									
Sympathy											
1f	Help child who has hurt himself	40	.44	—							
3f	Hit children who are hitting another child	17	.39	.60	—						
4e	Help child who is crying	25	?*	.52	.42	—					
6g	Fix toy or buy another if child breaks his toy	20	.19	.36	.33	.10	—				
Cleanliness											
2b	Clean ice cream off clothes	56	.15	.24	.26	.16	.65	—			
Sex											
1a	Tell girl to pull down dress	30	.47	.30	−.13	.30	.20	−.06	—		
2a	Tell boy to pull up pants	22	.23	.36	.04	.06	.28	−.10	.92	—	
Ethics											
1b	Replace or fix something he breaks belonging to mother	27	.00	.25	.16	.03	.60	.52	.24	.30	—
Miscellaneous											
4i	Feel grown up if he were suddenly grown up	12	.35	.40	.33	.30	.40	.60	.31	.06	.37

* A "?" signifies that the frequencies of the two responses were such as to make the estimation of their coefficient quite uncertain.

TABLE 5

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "WEAKNESS-AVOIDANCE"

(Social Reaction Interview, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number								
			3b	4g	5b	2f	6d	2c	3b	1f	2g
Aggression											
3b	Cry if father breaks promise to take him to circus	17	—								
4g	Cry if mother says he can't have ice cream	13	.80	—							
5b	Cry if everyone plays with another child and ignores him	12	.84	.78	—						
Sympathy											
2f	Avoid watching child get spanked	19	?*	−.09	?	—					
6d	Tell an adult if child breaks his toy	18	.14	.27	.30	.20	—				
Cleanliness											
2c	Tell an adult if ice cream gets on clothes	19	.11	.23	.28	.05	.62	—			
3b	Tell an adult if ball falls in garbage can	13	.54	.40	.29	.10	.40	.37	—		
Sex											
1f	Avoid little girl pulling up dress	10	?	?	−.05	.74	.04	−.20	−.09	—	
2g	Avoid little boy pulling down pants	14	?	?	?	.55	.08	−.10	−.20	.90	—
Miscellaneous											
1b	Believe children hate animals and insects most	9	.30	.20	.24	.07	−.16	.41	.40	.04	−.07

* A "?" signifies that the frequencies of the two responses were such as to make the estimation of their coefficient quite uncertain.

TABLE 6

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "CONSTRUCTIVE APPROACH"

(Social Reaction Interview, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number								
			6c	7d	8d	2g	8g	9c	6g	2b	1b (Nudity)
Dependency											
6c	Get another toy if his toy breaks	18	—								
7d	Look for another friend if his friend leaves	21	.27	—							
8d	Look after himself if he is hurt	20	.18	.21	—						
Aggression											
2g	Play with his own toys if child won't let him play with his	26	.00	.43	−.03	—					
Submission											
8g	Get another friend if mother says he can't play with someone he likes	13	.50	.44	.48	.10	—				
9c	Play with someone else if other children won't let him play with them	17	.14	.60	.31	.40	.53	—			
Sympathy											
6g	Fix toy or buy another if child breaks his toy	20	.29	.50	.00	.09	.47	.20	—		
Cleanliness											
2b	Clean ice cream off his clothes himself	56	.28	.20	.25	.35	.63	.15	.65	—	
Nudity											
1b	Ask mother later if she is taking a bath	23	.23	.33	.20	.20	.15	.01	.36	.18	—
Ethics											
1b	Replace or fix something he breaks belonging to mother	27	.50	.50	−.05	.35	?*	.46	.60	.52	.35

* A "?" signifies that the frequency of the two responses were such as to make the estimation of their coefficient quite uncertain.

obscure the practical limitations that invariably accompany limited reliability. The most desirable evidence of reliability would be provided by an arrangement where each child was given the same interview by two different examiners. This is difficult to provide under usual circumstances, and under the circumstances of our study it was impossible. Accordingly, we must be guided by estimates and indirect indications of possible reliability. As we have indicated,

TABLE 7

PRODUCT-MOMENT INTERCORRELATIONS AMONG CLUSTER SCORES
(Social Reaction Interview, Younger Sample; $N = 114$)

Cluster	Split-half Reliability*	Cluster				
		1	2	3	4	5
1. Dependence on Adults	.88	—				
2. Aggression	.58	−.41	—			
3. Socialized Compliance	.70	.08	.14	—		
4. Taking an Adult Role	.69	−.18	.45	.53	—	
5. Weakness-Avoidance	.57	.35	−.31	−.07	−.33	—
6. Constructive Approach	.58	−.01	.31	.46	.63	−.23

* Based on an odd-even correlation corrected by the Spearman-Brown formula.

consistent intercorrelations among the component bits comprising the cluster score are an indication of reliability, and the principle of internal consistency can be concisely applied by determining a split-half reliability by the Spearman-Brown procedure. This, however, may give an estimate which is too low if the number of items is few and if the items are somewhat heterogeneous in nature. Nevertheless, we have determined such split-half reliabilities, and they are included in Table 7, which gives the intercorrelations among the various scores emerging from the Social Reaction procedure. High correlations with other independent scores can also be indications of reliability. (It will be noted, for example, that the Constructive Approach cluster score has a correlation which exceeds our estimate for its split-half reliability.) In general, it is apparent that some of these cluster scores may have a reliability that compares favorably with many of the devices in common use for the evaluation of children. Other cluster scores offer modest reassurance of their reliability, but even for them the indications of reliability are sufficiently favorable to justify the use of the cluster scores in exploratory investigations where one hopes to get some indication of the nature and the direction of relationship, but does not hope for a close approximation of the actual degree of relationship.

The questions comprising the Social Reaction Interview for the younger children and for the older children were somewhat different from each other; a principal difference was the addition of new questions to the Social Reaction Interview for the older children. Another source of difference for the Social Reaction Interview clusters was the change in frequency of certain responses which seemingly accompanies change in age.

Changes due to age are well illustrated by a consideration of the *Dependence on Adult* cluster which was so conspicuous in our sample of younger children. In our younger group this cluster consisted of 18 items. In our older group, children mostly of eight or nine years of age, the frequency of these respective responses was so reduced that only four were sufficiently prevalent to justify their inclusion in the survey of the intercorrelations among the items of the Social Reaction Interview. When these four items were intercorrelated, they were found to bear minor positive relationships with each other. Although the implications of the *Dependence on Adult* cluster are somewhat similar for the two age groups, dependency on adults, as an attitude or point of view, obviously has less general descriptive significance for older children than for younger children. This is not surprising.

In our study of the Social Reaction Interview responses of five-year-old children, it was found that ten responses descriptive of rather simple *Aggression* were consistently interrelated and provided a basis for a cluster. These simple responses were relatively infrequent among the older children, however, and only one of them occurred with sufficient frequency to justify inclusion in our intercorrelations for the Social Reaction Interview. Since aggression in its simplest form is generally taboo in our society, it is not surprising that older and better socialized children would be reluctant to offer simple aggressive responses in the context of the Social Reaction Interview. Perhaps an additional factor which tends to suppress such responses is the kind of disciplinary control which is a part of the usual classroom situation, i.e., the classroom is possibly the earliest *generally* experienced situation wherein direct physical aggression among members of a group is uniformly tabooed and that taboo is enforced.

The trends for the *Socialized Compliance* cluster provide an interesting contrast with the trends discussed in the preceding paragraphs. The items that provide the basis for the *Socialized Compliance* cluster found for the younger children are more prevalent among the older sample than among the younger sample, and they tend to retain the pattern of positive interrelationships found for the younger children. The general tendency for a greater prevalence of the items of this cluster to be found among the responses for the older children is probably an expression of the specific learning and general socialization that tends to

characterize children as they increase in age; it may also be seen as a part of the general social developmental pattern which we have previously found expressed as a reduction of aggressive responses among the older children.

In our younger sample we found a cluster of ten items that we interpreted as an assumption of an *Adult Role* in the children's attitudes. In general, it appears that the intercorrelations among the items in question are low and inconsistent for the older sample (nevertheless, the suggested pattern of relationships within the cluster appears to be similar to the pattern for the younger sample).

In the younger sample ten items were found to be interrelated with sufficient consistency to result in our combining them into a cluster which we call *Weakness-Avoidance*. The responses that comprise this cluster are quite infrequent among our sample of older children, and only one of them was sufficiently prevalent to be included in our analysis for the older group.

A final cluster comprising ten items was found to be consistently interrelated in the responses from the younger children. The nature of these items was such as to result in our calling the cluster *Constructive Approach*. These items were more prevalent among the older children than among the group of younger children, but the correlations among these items were not consistent for the older sample.

The foregoing paragraphs provide a discussion of the manner in which the organization of social attitudes characteristic of younger children may have changed for older children. It is evident from our discussion that some patterns of reaction are of no descriptive value for older children because the component behavior is relatively infrequent. Other patterns of reaction descriptive of younger children lose their descriptive value because in the older children behavior may be organized differently than it is in the younger children.

Concepts that have descriptive value for one age may provide no descriptive economy for some other age. We find that in a study of responses of older children new concepts emerge with a descriptive value that may not be applicable to younger children. In Table 8, for example, we see a group of intercorrelations for seven responses which are consistently interrelated and imply that some children are generally willing to give *"Goody-Goody"* responses to questions in the Social Reaction Interview. These very nice and obliging responses should not be confused with the overt behavior of the children in the respective situations. It should be noted that three of these responses are descriptive of school situations, but the formation of this cluster may not be due entirely to the availability of new types of items for older children. Five of the items were available for the younger children, but the responses of the younger children were not systematically related in the respects implied by these responses from the older children. Thus there appears a new pattern of response that could not have been anticipated from the responses of younger children. The *Goody-Goody* cluster is reminiscent of the *Socialized Compliance* cluster and probably has a similar general meaning. A possible difference between the two would emphasize the compliant features of the *Socialized Compliance* cluster for the five-year-olds and the "plausible" features of the *Goody-Goody* cluster for the older children.

Eight responses, considered descriptive of a generally *Responsible Attitude*, were positively intercorrelated for the sample of older children (Table 9). This *Responsible Attitude* cluster for the older children has an implication quite similar to the *Constructive Approach* cluster for the younger children. Despite their common implications, these clusters for the younger sample and for the older sample have but three common items. If one were inclined to infer that these two clusters were descriptive of the same kind of drive in the two samples, i.e., a drive to react constructively to the values and needs of one's associates, we would say also that the behavior appropriate for the expression of this drive is different for children who differ in age. Although this interpretation is plausible enough, the degree of overlap between the *Constructive Approach* cluster for the younger children and the *Responsible Attitude* cluster for the older children is not sufficient for us to be confident that a common drive pattern is implicit. We can only say that although the two sets of responses are different from each other, they appear to have a highly similar social role.

Ten of the items for the older sample are sufficiently interrelated statistically and sufficiently consistent in their meaning to result in our setting them aside as a *Cooperation with Authority* cluster (Table 10). Four of these items appeared in the *Socialized Compliance* cluster which was found for the younger children. The content of two of the items is unique to the Social Reaction Interview procedure for the older sample and could not have appeared in

TABLE 8

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER "GOODY-GOODY"

(Social Reaction Interview,* Older Sample; $N = 50$)

Response Number	Response Item	% Frequency of Response	Response Number					
			2f	*1a*	*2a*	*3b*	*3a*	*6c*
Sympathy								
2f	Avoid watching child get spanked	22	—					
Sex								
1a	Tell girl to pull down dress	41	.34	—				
2a	Tell boy to pull up pants	41	.34	.85	—			
3b	Say "no" if man offers a present to go in his car	82	.29	−.05	−.15	—		
School								
3a	Explain circumstances if he got to school late	49	.06	.25	.25	.36	—	
6c	Be quiet if teacher wants everyone to be quiet	56	.24	.20	.33	.38	.10	—
Miscellaneous								
5a, b	Mother or father is person he thinks he is most like	27	.30	.30	.30	.23	−.03	.37

* The Social Reaction form included in the Appendix is the one used with the younger children. The form employed with the older children was identical except that it included a few additional items.

TABLE 9

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "RESPONSIBLE ATTITUDE"

(Social Reaction Interview,* Older Sample; $N = 50$)

Response Number	Response Item	% Frequency of Response	Response Number					
			1f	*6g*	*2b*	*3a*	*1b*	*4e*	*9a*
Sympathy									
1f	Help child who has hurt himself	74							
6g	Fix toy or buy another if child breaks his toy	58	.50	—					
Cleanliness									
2b	Clean ice cream off clothes	76	.34	.23	—				
3a	Get ball out of garbage can if it falls in	61	.15	.04	.30	—			
Ethics									
1b	Replace or fix something he breaks belonging to mother	54	.30	.24	.40	.45	—		
4e	Replace broken window if broken while playing ball	58	.45	.08	.00	.43	.64	—	
School									
9a	Pick up coat if someone knocks it on floor	50	.38	.20	.00	−.16	.31	.25	—
Assertion									
2a	Would volunteer if teacher asked someone to lead the class	47	.02	.30	.10	.22	−.09	.12	.27

* The Social Reaction form included in the Appendix is the one used with the younger children. The form employed with older children was identical except that it included a few additional items.

TABLE 10

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "COOPERATION WITH AUTHORITY"

(Social Reaction Interview,* Older Sample; $N = 50$)

Response Number	Response Item	% Frequency of Response	Response Number								
			3a	5a	5b	7a	8c	9a	1c	1b	4a (School)
Aggression											
3a	Remind father if he promised to take him to circus and then didn't	18	—								
5a	Play by himself if child visited his house and everybody played with this child and not him	20	.18	—							
Submission											
5b	Give toy to other child if mother tells him to	76	.48	−.14	—						
7a	Go last if friends say his turn is last	77	.15	.34	.42	—					
8c	Not play with child if mother says not to	61	.20	.47	.05	.25	—				
9a	Not play with other children if they say he can't	33	.30	−.05	.27	.55	.50	—			
Toilet											
1c	Tell adult if child wets his pants	35	.26	−.10	?**	.47	.33	.10	—		
Nudity											
1b	Ask mother later if she is taking a bath	55	−.08	.27	−.06	.22	.23	.34	.25	—	
School											
4a	Tell teacher if a child scribbles on his paper	74	−.04	.40	.25	.10	.37	.32	.26	.33	—
Assertion											
4a	Tell policeman if he is in a strange place and can't find mother	52	.45	.15	.20	.00	.57	.34	.13	.20	.20

* The Social Reaction form included in the Appendix is the one used with the younger children. The form employed with the older children was identical except that it included a few additional items.

** A "?" signifies that the frequencies of the two responses were such as to make the estimation of their coefficient quite uncertain.

the cluster for the younger children. Thus it appears that the *Cooperation with Authority* cluster that we have found for our older sample could be related to the *Socialized Compliance* cluster found for our younger children. The general implications are similar; there is a marked overlap of content, and the differences for the most part may be related to differences in age.

We see that differences in age appear to result in both the disappearance of responses that provide a useful frame of reference for younger children and the appearance of new patterns of responses which are descriptively relevant for the older group. This shift is not surprising and it would be of considerable interest to make sequential studies to illustrate the course of this change. At present, however, we merely see evidence for the change and can relate it to a differential availability and appropriateness of the forms of behavior involved in the Social Reaction Interview changes. The nature of the continuity, if any, and the cause of the change are not clear. Possibly the shift in response pattern is a result of changes in the availability of the various forms of response; perhaps it is a result of differences in specifically taught values.

The differences between the clusters for our younger and older samples are of only incidental interest to us at present. We are primarily interested in the various clusters because they permit us to make rational distinctions among the children in our study. As was indicated in our discussion of the data for the younger children, each of the various bits of behavior that comprise the cluster is considered to be an indication of circumstances under which a given general class or form of behavior may occur. We desire to use the clusters as a basis for distinguishing among our children with respect to the number of different situations in which reactions that belong to a

given class characterize the child. Distinguishing among children on the basis of the number of different situations under which a class of reaction or form of behavior occurs is a way of measuring the pervasiveness or the generality of a given form of behavior. Accordingly, the clusters provide the basis for a kind of extensity scale; a high score on the scale simply means that the child shows the form of behavior implied by the cluster in numerous situations, a low score that the child is characterized by the implied form or class of behavior in relatively few situations.

Let us now summarize the differences in clusters for the two age samples. The fact that the younger sample differs from the older sample in ways that we would expect them to differ suggests that the differences may be largely due to differences in age, i.e., may reflect changes in age. Responses to the Social Reaction Interview indicate that *Dependence on Adults* is an unimportant basis for distinguishing between older children. It was also found that *Aggressive* attitudes are mentioned relatively infrequently by the older children. These clusters are not a part of our description of the older children. The *Socialized Compliance* cluster found for the younger children is also apparent for the older children. The data provided by the other children, however, provide evidence for a new cluster that is more descriptive of the older children than the *Socialized Compliance* cluster. This new cluster, called *"Goody-Goody"* has implications similar to those of the *Socialized Compliance* cluster. Accordingly, the *Goody-Goody* cluster will be employed in our analyses for the eight-year-olds and we shall not employ the *Socialized Compliance* cluster. The clusters indicative of *Taking an Adult Role* and indicative of *Weak-Avoidant* reactions are not evident in the data for the older children and, accordingly, are dropped from our analysis of the older children. The *Constructive Approach* cluster is not apparent for the older children, but in the data for the older children there has emerged a new cluster that is similar in its implications.

TABLE 11

PRODUCT-MOMENT INTERCORRELATIONS AMONG CLUSTER SCORES

(Social Reaction Interview, Older Sample; $N=81$)

Cluster	Split-Half Reliability*	Cluster 1	Cluster 2
1. Goody-Goody	.59	—	
2. Responsible Attitude	.52	.16	—
3. Cooperation with Authority	.41	.31	.24

* Based on an odd-even correlation corrected by the Spearman-Brown formula.

This new cluster is called *Cooperation with Authority*, and it will be employed in our analysis for the older sample.

Thus we see that for the older sample of children three cluster scores may be drawn from the Social Reaction Interview: *"Goody-Goody," Responsible Attitude,* and *Cooperation with Authority.* For the cluster scores emerging for the older sample, questions of reliability arise as they did from our data provided by the younger sample. There is no satisfactory answer to these questions, but the criterion of internal consistency may be applied by inspecting the intercorrelations among the bits or items. We have provided split-half reliabilities in Table 11, which provides the intercorrelations among the cluster scores for the older sample.

SCORES DESCRIPTIVE OF THE CHILD BASED ON THE MOTHER'S CHILD-REARING PRACTICES INTERVIEW

A lengthy, semistructured interview was conducted with the mother concern-

ing her child-rearing practices. Although very few specific questions were asked by us during the course of this interview, a standard set of general topics was always introduced for discussion. Our interviewers (Ph.D.'s in psychology, trained in psychotherapeutic interviewing) were prepared with a standard set of questions (see Appendix B) which were not asked, but for which answers were sought and recorded during the course of the interview. In practice, the interview was guided and extended until all of the desired information emerged; whenever specific questions were necessary, they were reserved for the end of the interview. Much of the information had to do with the reactions of the child, including the reactions of the child to the mother, to associates, to himself; it also included his fears and problems (Appendix C). These items were utilized as a basis for evaluation of the child's personal or social development as seen by the adoptive mother. Although the data may not be accepted as a simple, direct description of the child's behavior per se, this evaluative device is none the less relevant. After all, a very important phase of the child's personal and social development is that phase which is seen in the eyes of his mother.

Each of the clusters based on the *Child Rearing Practice Interview* comprises a relatively small number of items and in some cases there are several zero correlations. Here again the naming of the clusters is something of an arbitrary matter and the reader should feel quite free to interpret them differently.

The items that comprise Table 12 all refer to responses which frequently are described in clinical discussions as *Compulsive* responses; among these items the number of conspicuous positive interrelations is quite sufficient to encourage one to place them in a common group and to give some credence to the implied common behavioral feature.

In Table 13 the *Aggressive* cluster is seen to be made up of items that are for the most part not only highly interrelated but of items that are almost unmistakable in their implications. It seems

TABLE 12

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "COMPULSIVE REACTION"

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number					
			B4	B5	B6	C1	C3	6
Feeding								
B4	Desires specific foods	45	—					
B5	Vomits easily	32	.50	—				
Toilet training								
B6	Is sporadically wet during night	48	.15	.19	—			
Cleanliness								
C1	Initiates washing	63	.25	.44	.11	—		
C3	Initiates change to clean clothes	58	.06	.33	.14	.64	—	
Nervous mannerisms								
6	Masturbates	34	.50	.24	.44	−.03	.02	—
9	Has rituals	15	.34	.14	.37	−.05	.27	.10

TABLE 13

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "AGGRESSIVE"

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number					
			M2	M5	M6	C1	C2	C5
Aggression								
A. M2	Calls mother names when angry with her	63	—					
M5	Has temper tantrums when angry with mother	28	.43	—				
M6	Does spiteful things when angry with mother	34	.56	.47	—			
A. C1	Hits other children when angry with them	74	.27	.31	.34	—		
C2	Calls children names when angry with them	59	.40	.03	.28	.61	—	
C5	Has temper tantrums when angry with children	23	.51	.32	.50	.45	.58	—
C6	Does spiteful things when angry with children	26	.57	.31	.72	.39	.54	.60

unlikely that the naming of this cluster would be the basis for controversy.

In Table 14 the *Phobic* cluster comprises items that all describe fear or other types of anxiety or fearful responses. Although the pattern of intercorrelation is not perfectly consistent, it has sufficient consistency to encourage the belief that children differ with respect to the generality of their fears, and that in many children fearfulness in one situation is associated with fearfulness in another.

In Table 15 the *Dependence* cluster comprises only four items, all of which have positive interrelations although they are low. The writer sees a common behavioral component in these items, however, and since they seemingly describe an aspect of children's behavior

TABLE 14

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "PHOBIC"

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number						
			B2	B5	C1	11	12	14	15
Sleeping									
B2	Awakens easily	21	—						
B5	Has nightmares	48	.25	—					
C1	Is afraid of dark	33	.29	.42	—				
Nervous mannerisms									
11	Fears injury	10	.32	.03	.40	—			
12	Fears water or storms	24	.40	.11	.26	.53	—		
14	Fears animals	23	.50	.25	.30	.43	−.05	—	
15	Fears doctors	19	.24	.08	.26	.22	.05	.04	—
16	Has other fears	21	.38	.35	.60	.32	−.12	.33	.00

TABLE 15

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "DEPENDENCE"

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number		
			B1	B2	B3
Independence					
B1	Often requests help on tasks he can do	62	—		
B2	Often demands attention or affection	77	.27	—	
B3	Goes to parents for comfort in difficulties	68	.13	.32	—
B4	Goes to parents about quarrels with children	49	.30	.10	.40

that is of considerable practical importance to parents as well as to others, we are quite willing to include it in our analyses for whatever it is worth.

Table 16, *Suppression of Aggression*, may be interpreted differently by different readers. It will be regarded by some readers as quite similar in its implications to the *Weakness-Avoidance* cluster score which was described in our discussion of the *Social Reaction Interview*. Actually, however, this *Suppression of Aggression* cluster score does imply some important passive, dependent types of reaction which may often characterize children who do not show ordinary aggressive reactions, or at least tend to avoid aggressive responses.

The intercorrelations among these cluster scores for the *Child Rearing Practices Interview* are shown in Table 17. Note that the split-half reliability estimates for these cluster scores are also included.

The psychologist's Child Rearing Practices Interview with the mothers of the older children was quite similar to the interviews with the mothers of the younger children. The essential nature of any difference was due to the presence of additional items of information in the interview of the mothers of the older children. In the following paragraphs we shall re-examine the clusters of items that

TABLE 16

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "SUPPRESSION OF AGGRESSION

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number						
			B4	A6	B16	M4	M7	F7	C3
Independence									
B4	Goes to parents about quarrels with children	49	—						
Toilet training									
A6	Did not cry at start of toilet training	21	.46	—					
B16	Has cried after soiling at night	36	.35	−.26	—				
Aggression									
A. M4	Cries when angry with mother	69	.44	.23	−.07	—			
M7	Tries to control himself when angry with mother	23	.06	.37	−.03	.00	—		
A. F7	Tries to control himself when angry with father	31	.34	.50	−.10	−.03	.80	—	
A. C3	Cries when angry with children	50	.50	−.06	.33	.62	.21	.20	—
C4	Sulks or withdraws when angry with children	43	.69	.00	.43	.17	.25	.40	.43

TABLE 17

PRODUCT-MOMENT INTERCORRELATIONS AMONG CLUSTER SCORES

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 114$)

Cluster	Split-half Reliability*	Cluster			
		1	2	3	4
1. Compulsive	.52	—			
2. Aggressive	.70	.35	—		
3. Phobic	.57	.34	.28	—	
4. Dependence	.71	.04	.17	.06	—
5. Suppression of Aggression	.36	−.11	−.09	−.21	.41

* Based on an odd-even correlation corrected by the Spearman-Brown formula.

were descriptive of the child and based on items from the younger group; we shall consider the manner in which the original clustering observed for the younger children obtains or fails to obtain in the data for the older children. It seems most likely that the descriptive principles (clusters) that were useful in evaluating our younger sample may be different from those most relevant for the older sample.

Let us begin with the seven items that form a cluster of *Compulsive* reactions for the younger sample of children. In general, it appears that these seven items may be slightly less descriptive of the older sample and the intercorrelations indicate that these compulsive items are not consistently related for the older group of children.

In Table 18 we find the intercorrelations for the seven items that comprise an *Aggressive* cluster score for the older sample. The correlations for the older sample shown in Table 18 are positive and indicate that aggressive behavior as seen by the mothers is as consistent for the older children as it was for the younger children. It is noted that some of the aggressive reactions are reported less frequently for the older children than they were for the younger children.

Intercorrelations for *Phobic* items comprised a cluster in the data provided by the mothers of the younger children. The intercorrelations for the older children are less consistent in their implications than those provided for the younger children, however, and the *Phobic* cluster is not considered to be suitably descriptive for the older sample.

The *Dependence* items are less prevalent among the older children than they are among the younger children, nevertheless, they tend to be positively interrelated for the older group in a manner comparable with the younger group. It is not surprising, however, that the kind of dependent behavior that is described by mothers of the five-year-old children should be

TABLE 18

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "AGGRESSIVE"

(Child-Rearing Practices Interviews for Younger and Older Samples)

Parts of Child-Rearing Practices Form	Response Items Based on Cluster for Younger Children	Frequency of Response		Tetrachoric Correlations Based on Data for 50 Older Children					
		% of younger group ($N = 114$)	% of older group ($N = 81$)	M_2	M_5	M_6	C_1	C_2	C_5
Aggression									
AM_2	Calls mother names when angry with her	63	43	—					
AM_5	Has temper tantrums when angry with mother	28	19	.52	—				
AM_6	Does spiteful things when angry with mother	34	23	.34	.39	—			
AC_1	Hits other children when angry with them	74	73	.15	.01	.34	—		
AC_2	Calls children names when angry with them	50	70	.57	.44	.20	.24	—	
AC_5	Has temper tantrums when angry with children	23	23	.30	.72	.37	.23	.52	—
AC_6	Does spiteful things when angry with children	26	22	.38	.41	.63	.32	.50	.40

TABLE 19

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "ANXIETY"

(Child-Rearing Practices Interview with Mother, Older Sample; $N = 50$)

Response Number	Response Item	% Frequency of Response	Response Number							
			B_4	B_5	B_1	B_2	A_5	B_1	6	15
Feeding										
B_4	Desires specific foods	29	—							
B_5	Vomits easily	29	.36	—						
Independence										
B_1	Often requests help on tasks he can do	42	.35	.35	—					
Sleeping										
B_2	Awakens easily	23	−.07	.03	.11	—				
Sex										
A_5	Participated in sex play with other child (before age of 6 years)	22	.33	.06	.23	.40	—			
Ethics										
B_1	Often lies	37	.51	.45	.37	.30	.16	—		
Nervous mannerisms										
6	Masturbates	19	.34	.15	.37	.08	.32	.10	—	
15	Fears doctors	10	.19	.70	.52	.12	.13	.33	.20	—
X (includes 2, 3, 4, 7, 8, 9, 10)	Has rituals or mannerisms	37	.51	.39	.43	.05	.48	.48	.28	.33

somewhat less prevalent in the responses of mothers of the older children.

In the foregoing paragraphs we see that many of the forms of behavior that are descriptive of the younger children are somewhat less conspicuous in the older children. In addition, it is seen that with respect to some behavioral facets responses described by the mothers have a different organization for the older children. Consistencies that are evident for the younger children are rendered doubtful or obscure in the data provided by the older age groups.

The intercorrelations for the older group of children were scrutinized for plausible consistencies, and certain clusters emerged. In some instances the new clusters may have no parallel in our study of the data for the younger children, and in other instances they may be seen as a possible modification or extension of a pattern or response that characterizes the younger children.

In Table 19 we find that there is a consistent interrelationship among several responses which may be considered as indicative of *Anxiety*. The appearance of this cluster in the data for the eight-year-old group and the appearance of the *Phobic* cluster in the data for the younger group provides an interesting contrast and suggests a trend that should receive further scrutiny. Specifically, it suggests that among younger children fears are generalized, so that the child who is fearful in one situation tends to be fearful in other situations. Among older children, however, specifiable fears tend to be less generalized; instead, there is a suggestion that anxiety-type responses (or at least responses that could be interpreted as indicative of anxiety) are generalized.

In Table 20 we find that the data provided by the older sample include 11 items that are consistently interrelated and that appear to have a common behavioral significance. Although these items were somewhat more prevalent among the younger children than among the older children, they were not as con-

TABLE 20

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "SPOILED CHILD"

(Child-Rearing Practices Interview with Mother, Older Sample; $N = 50$)

Response Number	Response Item	% Frequency of Response	Response Number									
			B_1	B_2	B_3	M_1	M_4	M_5	M_{12}	F_5	C_3	A_3
Independence												
B_1	Often requests help on tasks he can do	42	—									
B_2	Often demands attention or affection	66	.50	—								
B_3	Goes to parents for comfort in difficulties	51	.23	.36	—							
Aggression												
A-M_1	Tries to strike mother when angry at her	11	.44	.10	.33	—						
A-M_4	Cries when angry at mother	71	.24	.38	.35	.40	—					
A-M_5	Has temper tantrum when angry at mother	10	.28	.38	.02	.57	.59	—				
A-M_{12}	Defends himself by counter accusations when angry at mother	40	.35	.45	.13	.07	.52	.35	—			
A-F_5	Cries when angry at father	60	.23	.35	.48	.27	.87	.37	.32	—		
A-C_3	Cries when angry at children	64	.01	.34	.42	.30	.41	.08	.05	.68	—	
Cleanliness												
A_3	Played with feces	24	.08	.20	.38	.06	.30	.26	.35	.20	.23	—
Nervous mannerisms												
6	Masturbates	10	.37	.38	.20	.85	.42	.40	−.11	.50	.40	−.07

sistently organized among the younger children. All of these items could be descriptive of what the layman refers to as a *"Spoiled Child."* The appearance of this cluster indicates important differences among parents. Although the cluster itself can be used to describe children, the behavior of the child for the most part has a particular relevance for the parents. These responses could be seen, in general, as descriptive of aggresion in one form or another directed toward the parent, and they imply that some parents are conspicuously unable to reduce this aggressive drive or to divert it in some satisfactory manner.

In Table 21 we find the intercorrelations for 11 items that were not consistently interrelated for the younger children but that are quite consistent in their relationship for the older children. These items refer to the early reactions of the child to his excretory functions, and to the later reaction of the child to certain interpersonal situations. The underlying implication of these items, regardless of the chronological reference, appears to be *Control* of impulses both excretory and interpersonal.

In summary, the psychologist's interview with the mother concerning her child-rearing practices indicated that the responses of children in the older group were organized differently from the responses in the younger group. As a consequence, certain differences in the cluster scores will be employed in our analyses for the older children. The *Compulsive* cluster that characterized the younger children did not characterize the older children. The *Aggressive* responses form a conspicuous cluster for both groups of children, and, accordingly, will be employed in our analyses for the older children. The *Phobic* cluster for the younger children is not apparent in

TABLE 21

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "CONTROL"

(Child-Rearing Practices Interview with Mother, Older Sample; $N = 50$)

Response Number	Response Item	% Frequency of Response	Response Number									
			A17	B2	B3	B5	B6	B12	B13	B14	C1	C3
Independence												
A17	Assists in entertainment of guests	67	—									
Toilet												
B2	Usually dry all day before age of 24 months	49	.39	—								
B3	Usually dry all night before age of 36 months	55	.07	.62	—							
B5	Ceased to have sporadic accidents during day before 5 years	75	.26	.40	.55	—						
B6	Ceased to have sporadic accidents during night before 5 years	73	.40	.22	.75	.61	—					
Aggression												
B12	Rarely shows anger toward mother	55	.42	.20	.36	.57	.14	—				
B13	Rarely shows anger toward father	73	.32	.39	.29	.59	.24	.81	—			
B14	Rarely shows anger toward other children	45	.54	.33	.33	.58	.25	.71	.55	—		
Cleanliness												
C1	Initiates washing procedures	66	.29	.40	.44	.12	.23	.50	.38	.22	—	
C3	Initiates change to clean clothes	61	.23	.35	.35	.55	.10	.41	.48	.03	.73	—
D5	Uses knife properly for cutting food	47	.04	.08	.55	.22	.21	.45	.12	.25	.28	.15

the behavior described for the older children; there emerges a somewhat related cluster which we shall employ as a basis for an *Anxiety* cluster score. Although *Dependence* items seem less characteristic among the older children than among the younger children, we shall retain the *Dependence* cluster and use it in our analyses for the older group. A *Suppression of Aggression* cluster appears to have no counterpart for the older sample. In addition to the *Anxiety* cluster, other new clusters emerge for the older group and will be employed in our analyses. Among these are the *Spoiled Child* cluster and the *Control* cluster. In analyzing the data for the older children we found the *Aggression* items and the *Anxious* items to be very consistently interrelated (as were the *Aggressive* items and the *Phobic* items for the younger children). We shall combine the *Aggressive* and *Anxious* items to form an *Anxious-Aggressive* cluster and shall conduct some of our analyses with scores based on this particular cluster.

In the foregoing discussion of the *Child-Rearing Practices Interview* data, we have described interrelationships among items of information that were descriptive of the child but were provided by the mother in a semistructured interview situation. Scores based on these clusters cannot be taken as a literal description of the children; instead, they are a description of the children as reported by the mothers. Since they are based on consistent interrelationships, it cannot be claimed that they are capriciously determined and have no general significance. It is possible that to some degree they describe stereotyped attitudes of adoptive mothers toward their children; it seems probable, however, that they also describe stereotyped aspects of the child's reaction as seen by

TABLE 22

PRODUCT-MOMENT INTERCORRELATIONS AMONG CLUSTER SCORES

(Child-Rearing Practices Interview with Mother, Older Sample; $N = 81$)

Cluster	Split-half Reliability*	Correlation with Age at Follow-up	Cluster			
			1	2	3	4
1. Aggressive	.64	−.40	—			
2. Anxiety	.56	−.32	.57	—		
3. Dependence	.60	−.27	.18	.26	—	
4. Spoiled Child	.78	−.35	.46	.42	.68	—
5. Control	.78	.23	−.35	−.36	.11	−.15

* Based on an odd-even correlation corrected by the Spearman-Brown formula.

the adoptive mother. Since the behavior of the child as seen by the mother is no less important to us than the behavior of the child per se, the fact that mothers' attitudes or patterns of thinking are involved to some unknown degree in these clusters does not detract from our interest in them or from their relevance to our purposes. It is important, however, that the reader not overlook the fact that we are describing for the child patterns of behavior as they emerge from the interviews with mothers, and that these patterns of described behavior cannot be divorced from patterns of thinking on the part of the mothers.

In Table 22 the reader will find intercorrelations for various cluster scores that are used in our analyses for the older children. Although these correlations are not especially high (we would not be justified in considering the various clusters separately if they were), the nature and the direction of these correlations is plausible and does not detract from our interpretation of the clusters. Since the older group is somewhat more heterogeneous with respect to age than the younger group and since we consider some of the clusters to have a particular relevance to the age of the child, e.g., our data suggest that the very nature of the cluster may be a function of the child's age, the correlations between the cluster scores and the age of the children at the time of follow-up have been included in Table 22. It will be noted that the most conspicuous correlations are the negative ones relating certain asocial or aggressive behavior on the part of the child with the age of the child. The implication that broadly generalized aggression may be less characteristic of older children than it is of younger children is not only consistent with inferences we draw from our survey of cluster changes, but is also consistent with kinds of changes that are observed to reflect the values of our society.

SCORES DESCRIPTIVE OF THE ENVIRONMENT BASED ON THE MOTHER'S CHILD-REARING PRACTICES INTERVIEW

After our first direct contact with the mother, made by our social worker, the mother and the child later came to our offices. During most of this call, one of the psychologists worked with the child while another psychologist talked with the mother. The interview with the mother usually began with a discussion of child-rearing practices. In general, topics of conversation were introduced in a standard sequence, but the questions for which we sought answers were so clear in our minds that we recognized relevant information regardless of the order in which it was presented. (As the

reader may have anticipated, the interviewing procedures and other data-gathering techniques that we have employed were developed through a rather lengthy series of preliminary explorations and pretestings. In the preliminary work we used children from nursery schools and cooperating parents as subjects. Throughout the course of our data-gathering period we had frequent staff meetings wherein we presented and evaluated all the data for a given child. In this way we established and maintained a high degree of uniformity in our techniques and judgments. As the reader may have noted, the nature of our procedure for forming clusters is such that items which were infrequent, poorly defined, or inaccurately observed dropped out, i.e., could not yield a pattern of correlation which would lead to their inclusion in a cluster.)

Much of the information concerning the adoptive family's child-rearing practices was combined to form cluster scores in the same manner as some of the Social Reaction Interview material from the children was combined to form cluster scores. The procedure was to intercorrelate the numerous available bits of information concerning the child-rearing practices of the adoptive home, to scrutinize these intercorrelations in order to select out relatively discrete clusters of items, and then to refine these empirical clusterings on the basis of rational considerations. As a consequence, the items remaining in any cluster are not only positively related with each other and relatively independent of items belonging in some other cluster, but they all imply some common circumstance or common policy or have a common behavioral implication.

The nature of the cluster scores that we derived from the bits of *Child-Rearing Practices Interview* information may be examined by referral to Tables 23 to 26. The selection of items for original intercorrelation was based on frequency of response. Bits of information that occurred very infrequently in our sample or which characterized all the families were excluded at the outset because they obviously could provide no useful basis for distinctions.

In examining the intercorrelations of the items which comprise the various clusters, the reader should remember that each of these correlations is a sampling statistic and, accordingly, is subject to sampling variation. The amount of variation that should be expected among tetrachoric correlation coefficients is greater than that expected for Pearson *r's*. The present tetrachoric coefficients were determined by an employment of computing diagrams. In brief, the reader is advised not to ascribe any particular significance to uniquely high correlations nor to become impressed with the occasional zero or insignificantly small negative correlation coefficients.

Since the labeling of these cluster scores is a discretionary matter and depends not only on the writers' interpretation of the implications of the clusters but also on their choice of words to represent their interpretation or inference, the reader is urged to scrutinize the items comprising the clusters and to draw his own inference concerning their possible behavioral implications. Nevertheless, the writers feel that the variation in home environments, particularly with respect to the role a child may play and the models of behavior provided for him, are expressed to an important degree by the implications that inhere in the clusters that accompany the present discussion. For example, Cluster A, which is called *Eagerness*, might very weli be described differently. Nevertheless, the writers see in the items gathered together

TABLE 23

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER A, "EAGERNESS"

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number						
			A1	A2	A7 (Independence)	Da	A7 (Toilet)	A8	B10
Feeding									
A1	Infant was awakened for bottle feeding	17	—						
A2	Hungry infant was required to wait for scheduled bottle	36	.72	—					
Independence									
A7	Child does not play outdoors without adult supervision	49	.56	−.07	—				
Da	Child is repeatedly warned to avoid harmful situations	38	.53	.16	.48	—			
Toilet training									
A7	Toilet training was interrupted after it was begun	18	.66	.42	.05	.00	—		
Aggression									
A8	Mother gives in when child is angry with her	11	.21	−.15	.15	.40	.47	—	
B10	Parents reason with child about aggression	65	.34	.48	−.10	.24	.14	−.02	—
Sex training									
A3	Child has frequently observed unclothed adults	35	.31	.43	.17	.12	.35	.02	−.05

in Table 23 a common feature that has to do with a more than usual concern on the part of the mother for the child's development and training. It seems that, within the means available to all mothers, the ones who are characterized by these items have sought to do whatever they could to carry out their responsibility for the child and to take whatever steps are necessary for the safety and physical and spiritual peace of the child, even though it may come at the mother's expense. Perhaps the eighth item in this cluster may be viewed as paradoxical, yet the writers feel that this item may be seen to have a place in this cluster; possibly parents who can live out a wholehearted concern for the child's well-being are not likely to desire to hide or conceal themselves from the child. Perhaps this interpretation is farfetched and uncalled for; nevertheless, the intercorrelations tend to support it.

Cluster B1 (Table 24) is described as comprising practices that reveal a lack of sympathy on the part of the parents. This is called an *Unsympathetic Parent* cluster. The items suggest that some parents seemingly cannot in general understand or feel the child's hopes, pains, or frustrations, or at least that some parents are in general unconcerned with these experiences of a child, or perhaps choose to act as if such things did not exist. At one time we were inclined to call this the Spartan constellation of child-rearing practices; there is no indication that parents who show these positively intercorrelated items yield out of consideration for the child's feelings. This group of responses appears to indicate a rather inflexible child-training attitude on the part of the parents. One wonders how much frustration on the part of the child is involved. Cluster B1 was seen to comprise several parts which in view of some beliefs could have different implications for the development of the child's character. Several of the items included in Cluster B1 have to do with toilet training. Since *Severe Toilet Training* is currently given a rather cherished position

TABLE 24

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER B, "UNSYMPATHETIC PARENT"

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number								
			D_{1c}	D_5	C_{1c}	$C_{2b,c}$	C_{3c}	A_4	C_5	B_1	D_4 (Earlier)	D_4 (Now)
Feeding												
D_{1c}	Child is coerced to eat	38	—									
D_5	Child wanted bottle at time it was discontinued	24	.11	—								
Independence												
C_{1c}	Child's pain is ignored or reproved	40	−.08	−.05	—							
$C_{2b,c}$	Child is not soothed or reassured when lonely or afraid	33	.21	.58	.44	—						
C_{3c}	Child is reproved for errors	37	.20	.34	.20	.41	—					
Toilet training												
A_4	Child was kept on toilet at least 10 minutes in early toilet training	32	.37	−.13	.05	.40	−.14	—				
C_5	Child's messes were disgusting to mother	38	.32	.15	.26	.22	−.08	.37	—			
Aggression												
B_1	Child is spanked for aggression toward mother	56	.50	.13	.36	.44	.03	−.05	.38	—		
Cleanliness												
D_4	Child learned to use fork at 5 years or earlier	11	.31	.41	.27	.41	.34	.30	.07	.37	—	
D_4	Child uses fork now	13	.39	.35	.48	.15	.40	.54	.38	.27	?*	—
Sex training												
B	Child has received severe sex training	41	.30	.34	.04	.25	−.09	.50	.48	.20	.25	.32

* A "?" signifies that the frequencies of the two responses were such as to make the estimation of their coefficient quite uncertain.

TABLE 25

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER B_2, "SEVERE TOILET TRAINING"

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number				
			A_3	A_4	B8	B_9	C_5
Toilet training							
A_3	Child was first placed on toilet at age of 1 year or earlier	36	—				
A_4	Child was kept on toilet at least 10 minutes in early toilet training	32	.12	—			
B8	Child was ridiculed for soiling	33	.09	.17	—		
B_9	Child was hit for soiling	34	.35	.16	.47	—	
C_5	Child's messes were disgusting to mother	38	.44	.37	.17	.31	—
Sex training							
B	Child has received severe sex training	41	.23	.50	.32	−.07	.48

in developmental psychology, those items were set aside to provide the basis for a separate cluster. Accordingly, in our analyses we will handle Clusters B1 and B2 separately. Cluster B1 indicates a generally unsympathetic, unfriendly attitude of child rearing and Cluster B2 (Table 25) is specific with respect to rigidity in matters concerning toilet training.

Cluster C (Table 26) is rather an interesting cluster because it very likely is confounded with the mother's report of behavior of the child. Accordingly, in our analyses we shall have to regard with considerable caution the *Punishment for Aggression* cluster in the Child-Rearing Practices and the *Aggression* cluster from the same source. The interrelationship between these two clusters is not clear. One could be an artifact with respect to the other. It is interesting to observe, however, that the various items comprising this *Punishment for Aggression* cluster are rather highly intercorrelated. This suggests that with respect to the mother's attitude or behavior there is some consistency in this area; this certainly agrees well with our subjective impressions based on interviews with the mothers. There are numerous mothers who will not tolerate aggressive expressions by their children in any form.

The intercorrelations for these various cluster scores are shown in Table 27. As we would expect, the scores based on the B1 cluster *(Unsympathetic Parent)* are rather highly correlated with the *Severe Toilet Training* cluster score; they overlap somewhat in content. The rest of the cluster scores concerning the mother's child-rearing practices, however, are relatively independent of each other. The number of items comprising each of the clusters is modest, but for the most part the intercorrelations among items are sufficiently high to encourage us in our expectations that the measures of the Child-Rearing Practices which these cluster scores provide could prove useful to us in our analyses.

It is of interest to examine the data provided by the mothers of the older children and to compare the organization of their responses with the organization of the responses of the mothers of the younger children. The interviews with the mothers of the older children

TABLE 26

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER C, "PUNISHMENT FOR AGGRESSION"

(Child-Rearing Practices Interview with Mother, Younger Sample; $N = 100$)

Response Number	Response Item	% Frequency of Response	Response Number					
			B1	B2	B3	B4	B5	B6
Aggression								
B1	Child is spanked for aggression toward mother	56	—					
B2	Child is reprimanded for aggression toward mother	70	.24	—				
B3	Child is deprived of privilege for aggression toward mother	63	.17	.29	—			
B4	Child is spanked for aggression toward father	37	.71	.24	.33	—		
B5	Child is reprimanded for aggression toward father	63	.31	.61	.49	.40	—	
B6	Child is deprived of privilege for aggression toward father	48	.26	.46	.81	.47	.61	—
B7	Child is spanked for aggression toward children	20	.53	.22	.33	−.04	.44	.20

included some information that was not available for the younger children. This fact, combined with the fact that in general parents treat older children somewhat differently from younger children, adds interest to our comparison and leads us to the expectation that the differences may contribute to our knowledge of child-rearing practices as they pertain to the age of the child.

The interviews with the mothers of the younger children had provided eight bits of information that were consistently related and were judged by us to indicate an *Eagerness* on the part of the adoptive mother for many phases of child care. There is no indication of the existence of this cluster among the bits of information provided by the mothers of the older children, however. Some of the relevant information concerning feeding and toilet training could not be reliably produced by many of the mothers of the older children and as a consequence did not feature in our analysis. The remaining bits of information which had comprised the *Eagerness* cluster were not systematically interrelated in the data for the older children.

We find in the responses of the mothers of the older children, however, a cluster with similar implications. In Table 28 correlations are revealed for a number of items which are considered to be indicative of an overcontrolling attitude on the part of the mother. Since the *Overcontrolling* cluster for the older children has but one item of information in common with the eagerness cluster for the younger children we cannot

TABLE 27

PRODUCT-MOMENT INTERCORRELATIONS AMONG CLUSTER SCORES

(Child-Rearing Practices Interview, Younger Sample; $N = 114$)

Cluster	Split-half Reliability*	Cluster		
		1	2	3
1. Eagerness	.57	—		
2. Unsympathetic Parent	.44	−.02	—	
3. Severe Toilet Training	.44	−.01	.56	—
4. Punishment for Aggression	.78	−.05	.36	.23

* Based on an odd-even correlation corrected by the Spearman-Brown formula.

TABLE 28

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "OVER CONTROLLING"

(Child-Rearing Practices Interview with Mother, Older Sample; $N = 50$)

Response Number	Response Item	% Frequency of Response	Response Number					
			21a	B5	Da	C3	C5	B9
Independence								
A21a	Mother gives in to child's repeated demands	32	—					
B5	Parent intervenes in child's quarrels with other children	34	.27	—				
Da	Child is repeatedly warned to avoid harmful situations	41	.04	.28	—			
Toilet								
C3	Mother looks at child's stool	15	.22	.60	.30	—		
C5	Child's messes disgusting to mother	27	.40	.38	.30	.48	—	
Aggression								
B9	Child is deprived of privileges for aggression toward children	30	.17	.29	−.03	.49	.32	—
Sleeping								
D4	Child has night light on	41	.25	.00	.08	.20	.37	.05

assume that they are identical or that they necessarily bear a sequential relation to each other. The similarity of their implication for the mother, however, is noteworthy.

In their interviews the mothers of the younger children had provided many bits of information that seemingly pointed toward an *Unsympathetic* reaction to the needs and problems of young children. In our sample of mothers of older children some of the bits were too infrequent to justify analysis.

The mothers of the younger children had also indicated in their responses that there were systematic differences among them with respect to the severity of toilet-training practices. The intercorrelated items of information that provided a *Severe Toilet Training* cluster for the younger children were found to be similarly interrelated in the information from the mothers of the older children (see Table 29). This systematic patterning of the responses of mothers with respect to toilet training leads us to hope that major differences in toilet training may be studied for both the younger and the older children in our study.

In the responses of the mothers of the younger children we found indication that aggressive expression on the part of the children was generally tabooed by some of the mothers. Systematic differences in punishment for aggression were also revealed in the material supplied by the mothers of the older children. As a matter of fact, it seems possible that punishment for aggression may be more prevalent and more distinct for the mothers of the older children than for the mothers of the younger children. As illustrated in Table 30, certain additional bits of information are added to the *Punishment for Aggression* cluster in the data for our older group.

In Table 31 will be found the split-half reliabilities and intercorrelations of these cluster sources for the older sample.

TABLE 29

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "SEVERE TOILET TRAINING"

(Child-Rearing Practices Interview with Mother, Older Sample; $N = 50$)

Response Number	Response Item	% Frequency of Response	Response Number				
			A_3	A_4	B8	B_9	C_5
Toilet							
A_3	Child was first placed on toilet at age of 1 year or earlier	55	—				
A_4	Child was kept on toilet at least 10 minutes in early toilet training	58	−.32	—			
B8	Child was ridiculed for soiling	22	.25	.29	—		
B_9	Child was hit for soiling	19	.40	.40	.10	—	
C_5	Child's messes were disgusting to mother	27	.32	−.05	.45	.30	—
Sex							
B	Child has received severe sex training	35	.26	.46	.30	.14	.48

OTHER SCORES DESCRIPTIVE OF THE HOME

In addition to the interview concerning child-rearing practices, the mother was interviewed also with respect to the general organization of the home, including its activities, values, recreations, and general pattern of living. The content of this interview was recorded on a form called the Conditions of Child Rearing; a sample of this is included in Appendix D. Another source of information descriptive of the home was provided by the use of a set of rating scales called the Multiple Rating Scale. The ratings were made by the psychologist as a result of the interview with the mother. A copy of this is included in Appendix E. The Multiple Rating Scale is of unusual interest because it is of such a nature as to be employed by both the social worker who visited the home and the psychologist who interviewed the mother. Accordingly, we have two sets of these ratings for each family. (As we shall see, these two sources of information covering a common phase of the home will be useful in our subsequent concern with a possible confounding between the nature of our findings and the source of our data.) In addition to the Multiple Rating Scale, the social worker used a Home Rating Scale in recording her observations at the time of her visit to the home. Appendix F presents a copy of this scale.

These three forms—Conditions of Child Rearing, Multiple Rating Scale, and Home Rating Scale—provided bits of information descriptive of many important facets of the home other than child rearing per se, and accordingly were used as a basis for forming cluster scores descriptive of the home and its general atmosphere. (At some points we refer generically to these clusters as "Conditions of Child Rearing" cluster scores, although they obviously are not limited to the items included in the Conditions of Child Rearing form.) The procedure for forming these cluster scores is the one described for the other cluster scores: specifically, items for which responses occurred with inappropriate frequency were eliminated; the remaining items were intercorrelated, and those that showed fewer significant, positive correlations than might be expected on the basis of chance were eliminated. On the basis of inspection, relatively discrete clusters of interrelated items were formed; these clusters were further refined by excluding all items that seemed

TABLE 30
TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, PUNISHMENT FOR AGGRESSION
(Child-Rearing Practices Interviews for Younger and Older Samples)

Parts of Child-Rearing Practices Form	Response Items Based on Cluster for Younger Children	Frequency of Response (% of younger group (N = 100))	Frequency of Response (% of older group (N = 50))	Tetrachoric Correlations Based on Data for 50 Older Children								
				B1	B2	B3	B4	B5	B6	B7	B8	Cra
Aggression												
B1	Child is spanked for aggression toward mother	56	42	—								
B2	Child is reprimanded for aggression toward mother	70	84	.30	—							
B3	Child is deprived of privilege for aggression toward mother	63	74	.00	.33	—						
B4	Child is spanked for aggression toward father	37	25	.75	.30	.62	—					
B5	Child is reprimanded for aggression toward father	63	77	−.02	.80	.60	.30	—				
B6	Child is deprived of privilege for aggression toward father	48	60	.15	.68	.92	.45	.70	—			
B7	Child is spanked for aggression toward children	20	13	.40	−.16	−.21	−.04	.16	−.12	—		
	Additional Response Items Based on Cluster for Older Children											
Toilet B8	Child was ridiculed for soiling	33	22	.14	.42	.30	.25	.54	.28	.00	—	
Aggression Cra	Parents spank child less now than in earlier years	—	68	.32	.31	.45	.28	.55	.63	.15	.20	—
Crc	Parents deprive child of privilege more now than in earlier years	—	59	.02	.26	.66	.35	.59	.77	.04	.18	.40

TABLE 31
PRODUCT-MOMENT INTERCORRELATIONS AMONG CLUSTER SCORES
(Child-Rearing Practices Interview, Older Sample; N = 81)

Cluster	Split-half Reliability*	Cluster 1	Cluster 2	Cluster 3
1. Overcontrolling	.32	—		
2. Severe Toilet Training	.45	.35	—	
3. Punishment for Aggression	.82	−.04	.18	—
4. Unsympathetic Parent	.33	.18	.67	.04

* Based on an odd-even correlation corrected by the Spearman-Brown formula.

to be behaviorally inconsistent with the over-all implications of the group.

The items that have been gathered together to form Cluster D, *Ambition,* are seen to bear consistent positive relations with each other and seem to the writer to involve a respect for achievement (Table 32). It appears that evidences of interest in achievement of various types all tend to go together. Most of the types of achievement that we note here, however, have to do with a relatively high status in our social and economic structure.

Cluster E (Table 33) is called *Harmonious Family Relationships.* Its component items have positive intercorrelations and for the most part show that the members of a family may be congenial and enjoy each other's company in several respects. Some of the items appear twice in this cluster score depending on whether or not they are based on the social worker's observations or the psychologist's observations.[4]

[4] For most items, the psychologist's ratings and the social worker's ratings are in good agreement, despite the fact that they were based on observations at both different times and places. Where there is evidence of disagreement, the social worker's ratings and the psychologist's ratings are handled as separate items.

TABLE 32

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER, "AMBITION"

(Conditions of Child-Rearing Interview with Mother and the Multiple Rating Scale D, Younger Sample; $N = 100$)

Response Item		% Frequency of Response	Response Number								
			8a	13a	19a	21a	22a	23, 4	23, 5	23, 11	23, 15	23, 16
Parts of Conditions of Child-Rearing Form												
8. Community service	*a.* At least one parent *is* very active in community service	25	—									
13. Need achievement	*a.* One or both parents are considered outstanding in the community	26	.87	—								
19. Culture (music)	*a.* Parents frequently listen to opera or classical music	45	.64	.60	—							
21. Culture (literature)	*a.* Parents read classics, outstanding novels, literary magazines, etc.	16	.54	.50	.80	—						
22. Culture	*a.* Parents frequently play musical instruments, paint or sculpture	17	.31	.72	.41	.54	—					
23. Recreation	4. One or both parents frequently travel on pleasure trips	20	.48	.29	.18	.36	.21	—				
Recreation	5. One or both parents frequently go to the legitimate theater	11	.46	.44	.40	.39	.38	.44	—			
Recreation	11. One or both parents collect non-art objects	8	.36	.50	.40	.18	.35	.29	.30	—		
Recreation	15. One or both parents frequently go to lectures	7	.58	.42	.15	.60	.42	.35	.55	—	—	
Recreation	16. One or both parents frequently read	45	.44	.40	.42	.60	.24	.35	.27	−.10	.35	—
Part of Multiple Rating Scale Form												
5. Flexibility of parents' expectations	*a.* Parents have fixed ideas about child's education and vocation	8	.53	.34	.60	.39	.52	−.10	.30	.42	.66	.40

TABLE 33

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER E, "HARMONIOUS FAMILY RELATIONSHIPS"

(Conditions of Child-Rearing Interview with Mother and the Multiple Rating Scale, Younger Scale; $N = 100$)

Response Item		% Frequency of Response	Response Number							
			15a	24c	25c	26d	8a	9d	6a*	6a†	7c*
Parts of Conditions of Child-Rearing Form											
15. Story telling	*a.* Parents and child usually read together	83	—								
24. Mother's original educational and vocational aspirations	*c.* Mother's original ambitions are in line with present life situation	59	—	—							
25. Father's original educational and vocational aspirations	*c.* Father's original ambitions are in line with present life situation	57	—	—	—						
26. Family Compatibility	*d.* Parents are compatible and harmonious	39	.40	—	—	—					
Parts of Home Rating Scale Form											
8. Sociability (visitors)	*a.* Family has guests frequently	49	.24	—	—	.32	—				
9. Family group recreation	*d.* Family enjoys group activities	62	.25	—	—	.53	.55	—			
Parts of Multiple Rating Scale Form											
6. Mother's enjoyment of child	*a.* Mother shows pleasure in child's behavior (Psychologist)	38	.26	—	—	.28	.03	.37	—		
6. Mother's enjoyment of child	*a.* Mother shows pleasure in child's behavior (Social Worker)	30	.55	—	—	.10	.31	.50	.41	—	
7. Mother's reaction to child	*c.* Mother is objective but favorable toward child (Psychologist)	48	.22	—	—	.27	.03	.34	.66	.18	—
7. Mother's reaction to child	*c.* Mother is objective but favorable toward child (Social Worker)	43	.24	—	—	.21	.31	.48	.18	.55	.51

* Psychologist.
† Social Worker.

Cluster F (Table 34) had been tentatively called a slovenliness cluster. Perhaps this is a harsh designation for this cluster and it probably implies more disapproval than the investigators actually feel. Accordingly, it is now designated as the *No Ambition* cluster. It is certain that these items neither imply the existence of success in any socially approved undertaking nor indicate any striving for such success. These are the kinds of things that customarily are not characteristic of the families and the homes that are respected in the community because of achievement or because of community responsibility.

Cluster G (Table 35) we have called *Rejection of Child*. Perhaps this designation may receive the least sympathy from the reader because "rejection of child" is a concept that has deteriorated with familiarity and to many people has become almost meaningless. Nevertheless, we find here a group of items that bear a rather impressive degree of positive interrelationship and that fail to indicate any friendliness toward the child or any enjoyment from the child's existence. It seems that all of these items tend to distinguish between parents in much the same way, and that the basis of this distinction has to do with the friendliness of the parent toward the child. One could say that the lack of friendliness is due to the mother's dislike of the child, or perhaps it indicates an inability for liking any child. At any rate, it would seem that the distinction which a score based on this cluster would provide could be related to our concept of rejection.

We have in Cluster H (Table 36) a group of items that are positively interrelated and that suggest to us that the parents may not enjoy each other's company, or at least that the parents may fail to experience a great deal of satisfaction

TABLE 34

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER "NO AMBITION"

(Conditions of Child-Rearing Interview with Mother and Multiple Rating Scale, Younger Sample; $N = 100$)

		Response Item	% Frequency of Response	Response Number								
				8c	11c	13c	18c	19c	21c	1c	2c	3c
Parts of Conditions of Child-Rearing Form												
8.	*c.*	Both parents are usually inactive in community affairs	55	—								
11.	*c.*	Home schedule is poorly organized	10	.43	—							
13.	*c.*	Both parents expend only a much effort as is required	17	.90	.26	—	—					
18.	*c.*	Parents rarely or never listen to forums, news analysts, etc.	38	.27	.57	.61						
19.	*c.*	Parents listen almost exclusively to popular music	38	.40	.45	.35	.50	—				
21.	*c.*	Parents read almost exclusively mysteries, comics, pulp magazines, etc.	20	.37	.48	.52	.40	.54	—			
Parts of Home Rating Scale Form												
1.	*c.*	Physical Plant	Home does not meet physical need of child	9	.54	.39	.39	.55	.55	.49	—	
2.	*c.*	Outdoor Play Space	Home has little or no play space	10	.55	.27	.42	.30	.60	.35	.87	—
3.	*c.*	Maintenance of Home	Exterior and grounds of home are not well maintained	25	.74	.39	.59	.29	.56	.49	—	—
5.	*c.*	Neatness	Home is characterized by disarray	7	.44	.60	.41	.24	.25	.35	.71	.49	.47

† Social Worker.

TABLE 35

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER G, "REJECTION OF CHILD"

(Conditions of Child-Rearing Interview with Mother and the Multiple Rating Scale, Younger Sample; $N = 100$)

	Response Item	% Frequency of Response	Response Number							
			9a	14a	16c	1b, c	3c*	3c†	6c, d*	6c, d†
	Parts of Conditions of Child-Rearing Form									
9.	Emotionality of mother	*a.* When angry, mother usually expresses her feelings without restraint	30	—						
14.	Expressed disapproval of parents	*a.* Parents are very critical of child	19	.65	—					
16.	Conversation between mother-child	*c.* Mother tends to discourage child from talking	17	.30	−.03	—				
	Parts of Multiple Rating Scale Form									
1.	Acceptance of child	*b* and *c.* Parents do not completely accept child as their own	32	.47	.37	.45	—			
3.	Affectionateness of mother	*c.* Mother rarely fondles or kisses child (Psychologist)	19	.32	.40	.33	.29	—		
3.	Affectionateness of mother	*c.* Mother rarely fondles or kisses child (Social Worker)	16	.35	.27	.20	.31	.15	—	
6.	Mother's enjoyment of child	*c* and *d.* Mother shows little or no real enjoyment in child's behavior (Psychologist)		.48	.21	.27	.76	.22	.42	—
6.	Mother's enjoyment of child	*c* and *d.* Mother shows little or no real enjoyment in child's behavior (Social Worker)	22	.40	.24	.30	.85	.37	.45	.73
7.	Mother's reaction to child	*a.* Mother is critical of child, describing his behavior in uncomplimentary ways	13	.67	.41	.47	.75	.25	.13	.75

* Psychologist.
† Social Worker.

or pleasure in each other's company. Perhaps the emphasis on pleasure in each other's company is unwarranted here and it may be a difference with respect to values other than purely social ones. At any rate, we have chosen to consider this a basis for a measure of *Parental Incompatibility* and we do this with full awareness that the term may be misleading to some of our readers. In every case, however, we encourage our readers to examine the items comprising each cluster and form their own inference concerning its possible meaning. Just as the meaning of a new intelligence test cannot be known until first the examiner familiarizes himself with the contents, the meaning of cluster scores cannot be known till the reader examines the bits of information that go together to form the cluster.

Cluster I (Table 37) is made up of five items which bear rather consistent positive interrelations with each other. Although the word *Overprotective* would seem to be justifiable in view of the nature of the items, perhaps some will feel that the cluster is a little pretentious inasmuch as it really involves only five bits of information that are based on but three different items. It should be noted, however, that the psychologist and the social worker have seen the mother under quite different conditions and, accordingly, their rating of the mother is not based on the same sample of behavior, i.e., the behavior was observed not only by two different people but it was observed in two different contexts. The fact that the social worker's and the psychologist's observations are not identical is indicated by the particular fact that they do not bear an exceptionally high correlation with each other. It is interesting (see Table 38) that the split-half estimates for reliability are relatively high for the

TABLE 36

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER H, "PARENTAL INCOMPATIBILITY"

(Conditions of Child-Rearing Interview with Mother and the Multiple Rating Scale, Younger Sample; $N = 100$)

Response Item		% Frequency of Response	Response Number 5c	24a	25a	26a, b
Parts of Conditions of Child-Rearing Form						
5. Parental contacts	*c.* Parents rarely spend leisure time together	15	—			
14. Mother's original educational and vocational aspirations	*a.* Mother's aspirations are markedly superior to present situation	7	—	—		
25. Father's original educational and vocational aspirations	*a.* Father's aspirations are markedly superior to present situation	11	—	—	—	
26. Family compatibility	*a* and *b.* Parents are very incompatible—may have considered divorce	11	.67	—	—	—
Parts of Home Rating Scale Form						
9. Family group recreation	*c.* Family rarely enjoys group activities	9	.65	—	—	.47

various cluster scores in this group, despite the fact that many of the cluster scores are based on items from different sources. It will be noted that in some instances a Multiple Rating item from the psychologist's interview and the same Multiple Rating item from the social worker's visit are used as components of a given cluster score. Since the items obviously have a similar meaning and are positively correlated, it is reasonable that they should fall into the same cluster score. The items are not identical, however; they refer to behavior observed by

TABLE 37

TETRACHORIC INTERCORRELATIONS OF RESPONSE ITEMS IN THE CLUSTER I, "OVERPROTECTIVENESS"

(Conditions of Child-Rearing Interview with Mother and the Multiple Rating Scale, Younger Sample; $N = 100$)

Response Item		% Frequency of Response	Response Number 2a*	2a†	4d	7d*
Part of Multiple Rating Scale Form						
2. Solicitousness towards child	*a.* Mother is oversolicitous with child (Psychologist)	26	—			
2. Solicitousness towards child	*a.* Mother is oversolicitous with child (Social worker)	12	.27	—		
4. Accelerational attempt	*d.* Parent tries to maintain child's immaturity	13	.65	.28	—	
7. Mother's reaction to child	*d.* Mother has marked protective bias toward child's behavior (Psychologist)	14	.30	.07	.38	—
7. Mother's reaction to child	*d.* Mother has marked protective bias toward child's behavior (Social worker)	12	.27	.47	.44	.51

* Psychologist.
† Social Worker.

TABLE 38

PRODUCT-MOMENT INTERCORRELATIONS AMONG CLUSTER SCORES
(Child-Rearing Practices Interview, Younger Sample; $N = 114$)

Cluster	Split-half Reliability*	Cluster				
		1	2	3	4	5
1. Ambition	.78	—				
2. Harmonious Family Relationships	.58	.03	—			
3. No ambition	.72	−.59	−.29	—		
4. Rejection	.76	.14	−.54	.10	—	
5. Parental Incompatibility	.73	.06	−.46	.32	.41	—
6. Overprotectiveness	.77	−.10	−.32	.19	−.01	.20

* Based on an odd-even correlation corrected by the Spearman-Brown formula.

two different persons on two different occasions and in two greatly different situations.

The Rejection cluster score comprised several parts of the Multiple Rating Scale form. Since the Multiple Rating Scale data were provided independently both by the social worker and by the psychologist, we decided to make a special check on the reliability of a "Limited" Rejection cluster score. We did this by forming for each child a Rejection cluster score based on the social worker's observations and a Rejection cluster score based on the psychologist's interview. Each of these partial scores comprised the ratings on Acceptance of the Child, Affectionateness of the Mother, and the Mother's Enjoyment of the Child. Obviously, a cluster score based on these few items would be greatly restricted in range; nevertheless, the respective restricted cluster scores correlated with each other to the order of .60. Since the type of information involved is somewhat judgmental in character and therefore not likely to yield the highest evidence of reliability, and since the basic observations were made under two greatly different conditions, we are inclined to consider this correlation of .60 as an indication that our cluster scores emerging from the various bits of information probably have a useful degree of reliability.

The intercorrelations among the cluster scores are shown in Table 38. Some of these intercorrelations are of considerable interest. As we would anticipate, *Ambition* and *No Ambition* are inversely related. It is also of interest to observe that *Harmonious Family Relationships* is inversely related with our *Rejection of Child* cluster score, and that the *Rejection* cluster score is positively related with the measure of *Parental Incompatibility*. (This confirms the work of others [3,16].) To complete the discussion of these parts, *Parental Incompatibility* is seen to be inversely related with *Harmonious Family Relationships*. Thus we see that the patterns of intercorrelations among the cluster scores coming from observations made by different raters in different contexts are consistent with each other in their implications.

When we consider the respective data for the older sample, the cluster scores that emerge from the material summarized on the *Conditions of Child Rearing* form, *Multiple Rating Scale*, and *Home Rating Scale* (see Appendixes) are quite similar to those emerging for the younger sample. That is to say, the respective clusters are either highly similar in content or quite analogous in their impli-

cations. There is one conspicuous exception to the over-all similarity. The *Overprotectiveness* cluster that emerged in the data for the younger children was not discernible in our analyses for the older sample.

In our study of the children and of the children's environment we sought to employ observations and procedures that would afford the greatest possibility of revealing relationships between circumstances of the child's rearing and criteria of the child's follow-up development. We have been guided primarily by what we thought were both probable and important kinds of relationships. We have been guided also by what we thought were the most successful efforts of others, and in every case our efforts can be related to the efforts of others—observational, analytical, or theoretical. Perhaps we may sum up best by saying that we have sought here to use a sampling procedure. We have sought representative information for the kinds of experiences and circumstances which we (on the basis of the consensus of the beliefs of others, and our own experiences as well) suspected would be most important in determining or anticipating our criteria. In such an undertaking as this, failure for a certain relationship to appear cannot be offered as evidence that such a relationship does not exist.

Lack of apparent relationship can be due to many things: the use of unreliable variables, faulty interpretation of a theoretical position, untoward but unrecognized characteristics of the sample, etc. If, however, in more aspects of our analyses than could be predicted from chance alone we find important and plausible relationships, we are inclined to ascribe some significance to them and attempt to relate them to the over-all purposes of our study. Lest we be misunderstood, however, it should be emphasized that we have not sought to sample or measure all of the kinds of environment which could conceivably be relevant. We have been limited by our obligation to the agencies, by the delicate nature of the status of adoptive children and adoptive families, by the time and material limitations imposed on any practicable piece of research, and by any biases of orientation that are based on our scrutiny of the published literature. Within these limitations we have not sought to measure intensively but in general have sought to measure extensively.

Summary

Let us review and summarize the nature of our methodological problem.

1. We desired useful measures of several aspects of the social and emotional development of young children. It is possible to think of at least four major aspects of the child's emotional and social development. One aspect would comprise an objective description of the child's behavior. Another aspect would comprise a description of the child as he is regarded by his associates outside of the home. Another would be the mother's opinion of the child. And a fourth would be the child's opinion of himself. Unfortunately, the attitude of our society toward adoptive families, and adoptive children particularly, is such that it would be very difficult if not impossible to visit schools and playgrounds and observe adoptive children and learn about the opinions of others concerning them. As a matter of fact, getting such data for a widely scattered group of children would be very difficult under any circumstances. Accordingly, we had to restrict the content of our inquiry to the child's opinion of himself and to the mother's opinion of the child. It is ob-

vious, therefore, that we do not have anything that could be called a total study of the child's adjustment. Nevertheless, the child's opinion of his own behavior and what the mother thinks of the child's behavior are very practical factors in the child's personal adjustment.

2. We desired useful measures of several aspects of the physical and psychological environment of our children. We had but two opportunities to get such information. One opportunity came at the time of our social worker's visit to the home. This was her first and only visit and had as its ostensible purpose the arrangement of the adoptive family's visit to the Institute of Human Relations. Our second opportunity to learn about the home came at the time of the mother's visit to our offices; while the child was being examined, a semistructured interview was conducted with the mother concerning the home in general and its child-rearing practices in particular. It was in this informal clinical context that we were obliged to get systematic, quantifiable information concerning the home.

3. The financing and planning of our investigation was of such a nature that no provision could be made for a preliminary period of study wherein measuring devices could be constructed. In effect, our position was a paradoxical one where we were obliged to construct measuring devices during the course of our inquiry. The only alternative was one of greatly restricting the scope of the study so that practically no information concerning the personal and social development of the child and practically no information concerning the psychological environment of the home would be available. Rather than so impoverish our investigation, we applied the procedures described in the present report.

4. Although we were confident that we could secure informational content relevant to the purpose of our investigation, we had the special problem of deciding how such content should be used. We were fearful that any a priori combination of information could be seriously misleading, and we were most desirous of using scores that had a meaning which could be empirically defended. Specifically, we were fearful that if the information were combined on some a priori basis to form scores, a given score might not have the meaning that had been ascribed to it. It was decided, therefore, that the most defensible score to use would be based on positively interrelated bits of information. Presumably such scores could have the same general meaning from individual to individual although the items comprising the identical scores of any two given individuals' scores might not be identical.

5. When one is using untried variables, one must have some assurance that the variables have a minimal useful reliability so that their use in exploratory investigation would not be doomed to failure from the start because of a total lack of reliability. It was our opinion that using positively interrelated bits of information as a basis for scoring would guarantee a certain minimal reliability. Specifically, consistently interrelated bits of information must themselves possess some essential reliability; otherwise they could not be so interrelated.

In the Appendixes one may find sets of forms that were used in order to provide standard records of the kinds of information that would be most relevant to our scoring purposes. In our use of these forms we excluded all items or bits that occurred with a frequency inappro-

priate for meaningful tetrachoric correlations, and in our study of the intercorrelations among the items we discarded all items that did not show more significant positive correlations than would have been expected on the basis of chance. In order to make our cluster scores as definitive and unambiguous as possible, we used only those items that showed positive interrelationships.

Although our principal analyses were based on the sample of younger children, all the analyses were replicated by the use of a sample of older children. It is interesting to note that the clusters found for the sample of younger children are not always similar to those for the sample of older children. In addition, clusters emerge which are appropriate for the description of the older children but are not appropriate for the description of the younger children. This change in the content of descriptive cluster scores is most apparent in the summary provided by Table 39.

Apparently the Social Reaction Interview may be appropriate enough for learning about some of the attitudes of preschool children. It is obvious that this device yields very little for the older children. In view of the tendency, emphasized in the child's school experience, to present one's attitudes in the best light, this result is not surprising. Table 39 also indicates certain differences between the behavior of older and younger children as reported by their mothers. This is seen to be a reasonable trend and is in keeping with commonly observed differences between children of these ages. Commensurate with the differences in children, there are also differences in the child-rearing practices of the parents. Some of the patterns of child-rearing practices that are apparent in the families' reaction to preschool children are

TABLE 39

CLUSTERS FOR YOUNGER AND OLDER SAMPLES, WITH SPLIT-HALF RELIABILITIES

Younger Sample		*Older Sample*	
Social Reaction Interview			
Dependence on adults	.88	Goody-goody	.59
Aggression	.58	Responsible attitude	.52
Socialized compliance	.70	Cooperation with authority	.41
Taking on adult role	.69		
Weakness-avoidance	.57		
Constructive approach	.58		
Child-Rearing Practices Interview (Child)			
Compulsive	.52	Aggressive	.64
Aggressive	.70	Anxiety	.56
Phobic	.57	Spoiled child	.78
Dependence	.71	Control	.78
Suppression of aggression	.36	Dependence	.60
Child-Rearing Practices Interview (Home)			
Eagerness	.57	Overcontrolling	.32
Unsympathetic parent	.44	Severe toilet training	.45
Severe toilet training	.44	Punishment for aggression	.82
Punishment for aggression	.78	Unsympathetic parent	.33
Conditions of Child-Rearing Interview (and Others)			
Ambition	.78	Ambition	.77
Harmonious family relationships	.58	Harmonious family relationships	.60
No ambition	.72	No ambition	.74
Rejection	.76	Rejection	.68
Incompatibility	.73	Incompatibility	.52
Overprotectiveness	.77		

obscured or absent in the families' reaction to the older children.

It will be noted that the material descriptive of the home per se, i.e., the facilities of the home and its values and activities, has an appreciable uniformity of structure for the two age groups. This is reasonable enough inasmuch as these scores (Conditions of Child Rearing) are not oriented about the child primarily, but are oriented about the home in general and the parents in particular.

In Table 39 it will be seen that many of our cluster scores have an odd-even reliability that is encouragingly high. It is quite possible that this approach, with some refinements, could result in interviewing procedures which yield quantifiable material comparable with the material gathered by testing devices.

It should be noted that the mother's information descriptive of the child and the mother's information descriptive of the home have a common and immediate source, and one could fear that some pattern of interrelationships between such variables could emerge primarily as a result of the common source. Fortunately, information indicative of rejective features of the home was gathered by both the psychologist and the social worker at different times and in different settings. We find an appreciable consistency between these two sources of information. Specifically various aspects of the child's behavior revealed by cluster scores emerging from the interview with the mother showed the same kind of relationships with the rejective information whether it comes from the social worker's visit or whether it comes from the psychologist's interview. It is obvious, therefore, that characteristics of the child as described by the mother and characteristics of the home do not have to have the mother as a common source of information in order for them to be interrelated.

From the beginning, we were aware that some of our information descriptive of the children and descriptive of the home could show a spurious evidence of relationship because in some instances they were recorded by the same interviewer. In order to minimize such a possible source of bias, the interviewers never knew the general nature of the scores that were to emerge from our analysis of the data, nor could they have known the manner in which the various items would contribute to the various scores.

In conclusion, our report indicates that one need not abandon hope of a quantitative approach to the study of human behavior merely because no standard measuring instruments are appropriate to the content of the investigation contemplated. It would appear that if one has means of securing the relevant informational content in standard form, one may use this content as a basis for a quantitative procedure, and accordingly, may enjoy the benefits of meaningful variables relevant to the desired content and possessing sufficient reliability to permit one to discover the nature of the most important relationships among the variables. After the nature of the most important relationships is discovered, one may or may not desire to perfect the measuring devices in such a way as to determine the exact degree of relationship.

APPENDIX A

SOCIAL REACTION INTERVIEW

DIRECTIONS: Ask the child the question and indicate which of the listed responses his answer most resembles. If his response is not listed, write it under "remarks." For the term "child" substitute "boy" or "girl" according to the sex of the interviewee.

INSTRUCTIONS: Let's play a game of pretending. I'll tell you what's happened and you tell me all the things you would do.

Dependency

1. Let's pretend you just got up in the morning and want to get dressed, what do you do?
   - *a.* Dress self.
   - *b.* Tell adult.
   - *c.* Ask what to wear.
   - *d.* Wait.
   - *e.* Get washed.
   - *f.* Remarks—

2. Let's pretend you are playing with your coat on and get too warm, what would you do?
   - *a.* Take off your coat.
   - *b.* Tell an adult that you are warm.
   - *c.* Ask permission to take off the coat.
   - *d.* Keep on playing.
   - *e.* Remarks—

3. Let's pretend your mother asked you to take a bath by yourself, what would you do?
   - *a.* Go ahead and take a bath.
   - *b.* Ask her to help you.
   - *c.* Tell her you don't need one.
   - *d.* Wait for parent's help.
   - *e.* Say that you can't.
   - *f.* Inquire or acquire bath toys.
   - *g.* Remarks—

4. When you get your meat for supper, what do you do about cutting it?
   - *a.* Cut it.
   - *b.* Ask to have it cut.
   - *c.* Ask for something else.
   - *d.* Refuse it.
   - *e.* Remarks—

5. Suppose you get hungry between meals, what do you do?
   - *a.* Get something.
   - *b.* Tell an adult.
   - *c.* Nothing.
   - *d.* Go to friends.
   - *e.* Eat.
   - *f.* Remarks—

6. Suppose you were playing and your toy broke, what would you do?
   - *a.* Try to, or fix it.
   - *b.* Ask for help to fix it.
   - *c.* Get another toy.
   - *d.* Tell an adult.
   - *e.* Stop playing.
   - *f.* Remarks—

7. Suppose you're playing with a friend and he has to leave, what do you do?
   - *a.* Keep on playing.
   - *b.* Stop playing.
   - *c.* Ask him to stay.
   - *d.* Look for another friend or activity.
   - *e.* Ask him whether he will return.
   - *f.* Say goodbye.
   - *g.* Remarks—

8. Suppose you fell down and hurt yourself, what would you do?
   - *a.* Forget about it.
   - *b.* Cry.
   - *c.* Tell an adult.
   - *d.* Wash it off, bandage.
   - *e.* Remarks—

9. When you have to go to the bathroom what do you do?
   - *a.* Go.
   - *b.* Tell an adult.
   - *c.* Wait.
   - *d.* Soils self.
   - *e.* Preparatory behavior.
   - *f.* Remarks—

10. When you're finished on the toilet, what do you do?
    - *a.* Completes toilet activities alone.
    - *b.* Request assistance
    - *c.* I tell or show mother.
    - *d.* Remarks—

11. Suppose your mother asked you to go to the store for her, what would you do?

a. Go.
b. Ask for company.
c. Say "no."
d. Ask to be permitted to get something for myself.
e. Statement of inability to go to store alone.
f. Do something else.
g. Remarks—

12. Suppose your mother has to go away for awhile, what would you do?

a. Stay with another adult.
b. I'd want to go also.
c. Ask her for a present when she returns.
d. Say I don't want her to go.
e. Say goodbye.
f. I'd stay by myself.
g. I'd wait for her.
h. Remarks—

Aggression

1. Suppose you wanted your friend's toy, what would you do?

a. Take it forcibly.
b. Tell an adult.
c. Ask him.
d. Give him mine.
e. Take it surreptitiously.
f. Remarks—

2. If a child won't let you play with his toys, what would you do?

a. Hit him.
b. Play with them anyway.
c. Don't let him play with mine.
d. Say he's selfish.
e. Tell an adult.
f. Offer to let him play with my toys.
g. Play with own toys.
h. Don't play with him.
i. Remarks—

3. Suppose your father promised to take you to the circus and then didn't, what would you do?

a. Remind him of his promise.
b. Cry.
c. Play with toys or friends.
d. Tell mother.
e. Go anyway.
f. I wouldn't go.
g. Remarks—

4. Suppose you wanted ice cream and your mother said you couldn't have it, what would you do?

a. Tell her I want it.
b. Ask for candy, bread and butter.
c. Ask father.
d. Do or say something angry.
e. I'd get it anyway.
f. I wouldn't have it.
g. Remarks—

5. Suppose a child visited at your house. Everybody played with the child and nobody played with you, what would you do?

a. Play by myself.
b. Cry.
c. Go away.
d. Hit the child.
e. I'd go to my mother.
f. Tell child to leave.
g. Make bid for attention.
h. Remarks—

6. Suppose a child hits you on purpose, what would you do?

a. Hit him back.
b. Tell an adult.
c. Cry.
d. Tell him not to hit you.
e. Go away from him.
f. Give him what he wants, try to please him.
g. Remarks—

7. Suppose a child takes a toy of yours that you don't want him to have, what would you do?

a. Hit him.
b. Tell an adult.
c. Take it back.
d. Tell him to give it back.
e. Take something of his.
f. Let him have it.
g. Remarks—

8. If another child calls you a bad name, what would you do?

a. Hit him.
b. Tell an adult.
c. Say something bad to him.
d. Pay no attention to it.
e. I'd say I'm not bad.
f. I wouldn't play with him.
g. Remarks—

Submission

1. When your mother tells you to eat something you don't like, what do you do?
   a. Don't eat it.
   b. Eat it.
   c. Eat a little bit of it but no more.
   d. Tell her how horrible it is.
   e. Ask for something else.
   f. Ask to leave.
   g. Tell her to eat it.
   h. Throw it on the floor.
   i. Remarks—

2. When your mother says that she thinks you need to go to the bathroom, what do you do?
   a. Go.
   b. Go and try.
   c. Say I don't need to.
   d. Go to the bathroom but not do anything.
   e. Leave the room where she is.
   f. Do nothing.
   g. Remarks—

3. When you're outside and your mother tells you to come in the house, what do you do?
   a. Go in.
   b. Say "no."
   c. Say "wait a minute."
   d. Ask to stay out longer.
   e. Keep on playing.
   f. Remarks—

4. When your mother tells you it's time to go to bed, what do you do?
   a. Go to bed.
   b. Ask if you can wait a while first.
   c. I don't go to bed.
   d. Go to your room and play.
   e. Say you don't want to go to bed—it's early.
   f. Remarks—

5. Suppose your mother tells you to let some other child play with a toy you are playing with, what do you do?
   a. Say no, or say it's mine.
   b. Give it to him.
   c. Give it to him begrudgingly or with resentment.
   d. Say after a while.
   e. Say why you don't want that child to have it.
   f. Let the child have it and then take the toy back.
   g. Get something else for the child.
   h. Remarks—

6. If your mother asks you to pick up your toys, what would you do?
   a. Do it.
   b. Do part of it.
   c. Say that you can't.
   d. Ask her to help you.
   e. Tell her to do it.
   f. Say that it's not your job.
   g. Tell her that you didn't mess it up.
   h. Say no.
   i. Remarks—

7. Suppose you and your friends were playing on a swing and your friends said your turn was to go last, what would you do?
   a. Go last.
   b. Tell them I wanted to go earlier.
   c. I'd play with something else.
   d. Tell adult.
   e. I wouldn't play with them.
   f. I wouldn't go last.
   g. I'd break the swing.
   h. I'd hit them.
   i. Remarks—

8. Suppose your mother says you can't play with someone you like, what do you do?
   a. I do anyway.
   b. Ask her why.
   c. I wouldn't play with him.
   d. I'd play with him when she wouldn't know.
   e. I'd be angry with mother.
   f. Cry.
   g. Get another friend.
   h. Remarks—

9. Suppose other children are playing and say you can't play with them, what would you do?
   a. I wouldn't play with them.
   b. Cry.
   c. Play with someone else.
   d. Tell an adult.
   e. Play alone.
   f. Ask why.
   g. I'd offer them something.
   h. Hit them.
   i. Remarks—

Sympathy

1. Suppose you see a child fall down and hurt himself, what would you do?
   a. Laugh.
   b. Push him down again.
   c. Ask him if it hurts.
   d. Tell an adult.
   e. Do nothing.
   f. Help him.
   g. Remarks—

2. Suppose you see a child get spanked, what do you do?
   a. Laugh.
   b. Say it served him right.
   c. Ask him why he got spanked.
   d. Feel very sorry that he's spanked.
   e. Avoid the person doing the spanking.
   f. Avoid watching or seeing the situation.
   g. I don't know; I wouldn't do anything.
   h. Remarks—

3. If you saw some children hitting a boy, what would you do?
   a. Hit him too.
   b. Laugh.
   c. Watch the other children hit him.
   d. Ask why they're hitting him.
   e. Tell them not to hit him.
   f. Hit the children.
   g. Run away.
   h. Tell an adult.
   i. Remarks—

4. If you saw a little child who was crying, what would you do?
   a. Pay no attention to him.
   b. Tell him to go home.
   c. Ask him what the trouble was.
   d. Tell an adult.
   e. Help the child.
   f. I don't know; I wouldn't do anything.
   g. Remarks—

5. If you had some candy and your friend didn't, what would you do?
   a. Give him some of mine.
   b. Tell him that he can't have any of mine.
   c. Tell him to go get some for himself.
   d. Tell him that he shouldn't have candy.
   e. Get some for him.
   f. Do nothing.
   g. Don't let him know you have candy.
   h. Remarks—

6. If a child breaks his toy, what do you do?
   a. Laugh.
   b. Don't let him play with my toys.
   c. Let him play with one of your toys.
   d. Tell an adult.
   e. Tell him not to worry, that he'll get a new one.
   f. Do nothing.
   g. Try to fix it or buy him another.
   h. Remarks—

7. If your mother was sick and went to bed, what would you do?
   a. Laugh.
   b. Tell her to get up.
   c. Pay no attention to her or play.
   d. Tell her it serves her right.
   e. Ask her if it hurts.
   f. Ask her if you could help her.
   g. Tell an adult.
   h. Assist, or be quiet.
   i. I'd take care of myself.
   j. Remarks—

8. Suppose you saw a little bird that was hurt and couldn't fly, what would you do?
   a. Leave it. Do nothing. I don't know.
   b. Tell an adult.
   c. Take it home.
   d. Kill it.
   e. Give it physical care.
   f. Curious.
   g. Remarks—

Strictness of Training

A. Cleanliness

1. Suppose one of your friends said "let's make mud pies," what would you do?
   a. Join him.
   b. Join him, but with caution.
   c. Tell him it's too dirty.
   d. Say no.
   e. Ask my mother.
   f. Watch play in the mud pies.
   g. Remarks—

2. Suppose you were eating ice cream and it dripped on your clothes, what would you do?
   a. Change clothes.
   b. Clean it off.
   c. Tell an adult.
   d. Keep on eating.
   e. Ask for more ice cream.
   f. Look at it.
   g. Remarks—

3. Suppose you were playing ball and your ball fell in a garbage can, what would you do?
   a. Get it out.
   b. Tell an adult.
   c. Get another ball.
   d. Stop playing.
   e. Leave it there.
   f. Get it out with device or covering.
   g. Remarks—

B. Sex

1. Suppose you saw a little girl pulling up her dress, what would you do?
   a. Tell her to pull it down.
   b. Tell an adult.
   c. Cry "Shame on you."
   d. Laugh.
   e. Look at her.
   f. Avoid her.
   g. Ask her what she's doing.
   h. Nothing. I don't know.
   i. Tell her it isn't right.
   j. Remarks—

2. Suppose a little boy pulled down his pants in front of you, what would you do?
   a. Tell him to pull them up.
   b. Tell an adult.
   c. Tell him it isn't right.
   d. Say "Shame on you."
   e. Laugh.
   f. Look at him.
   g. Avoid him.
   h. Ask him what he is doing.
   i. Nothing. I don't know.
   j. Hit him.
   k. Remarks—

C. Toilet

1. Suppose a little boy or girl wet their pants, what would you do?
   a. Laugh.
   b. Say "Shame on you."
   c. Tell adult.
   d. Feel sorry.
   e. Say you shouldn't do that.
   f. Avoid him.
   g. Nothing. I don't know.
   h. Remarks—

D. Nudity

1. Suppose you wanted to ask your mother (or father) something and she was taking a bath, what would you do?
   a. Ask her.
   b. Ask her later.
   c. Get in tub too.
   d. Help her.
   e. Go away.
   f. Ask permission to enter.
   g. Remarks—

Ethics

1. Suppose you broke something of your mother's that she liked a lot, what would you do?
   a. Tell her.
   b. Replace it or fix it.
   c. Hide pieces.
   d. Hide self.
   e. Cry or feel bad.
   f. Not tell her.
   g. Solicit aid.
   h. Apologize.
   i. Remarks—

2. Suppose you wanted a nickel and you saw your mother's pocketbook lying on the table, what would you do?
   a. Leave it there.
   b. Take it.
   c. Take it and tell her.
   d. Ask for money.
   e. I'd use my own money.
   f. Remarks—

3. Suppose you found a ball that you knew belonged to a friend of yours, what would you do?
   a. Return it.
   b. Keep it.
   c. Hide it.
   d. Tell an adult.
   e. Tell the friend.
   f. Leave it there.
   g. Remarks—

4. Suppose you were playing ball and broke a window, what would you do?
   a. Run away.
   b. Tell an adult.
   c. Not tell an adult.
   d. Apologize.
   e. Replace it.
   f. Remarks—

5. Suppose you ate part of your dinner. There was some left but you aren't hungry any more, what would you do?
   a. Eat it anyway.
   b. Tell an adult I'm not hungry.
   c. Leave it.
   d. Give it to pet.
   e. Leave table.
   f. Cry.
   g. Hide it.
   h. Remarks—

Miscellaneous

1. What do you think children like you hate the most?
   a. Dark.
   b. Animals and insects.
   c. Specific playmates.
   d. Children.
   e. Toy.
   f. Food.
   g. Father.
   h. Mother.
   i. Me.
   j. Remarks—

2. What do you think children like you are afraid of?
   a. Supernatural beings.
   b. Older child.
   c. Automobiles.
   d. Being bad.
   e. Being kidnapped.
   f. Getting lost.
   g. Animals and insects.
   h. Punitive agents, police, gypsies.
   i. Me.
   j. Remarks—

3. Suppose you could be a baby again, how would you feel?
   a. I wouldn't like it.
   b. Mother would take care of me.
   c. I'd be in a crib all day.
   d. I'd drink milk, eat different foods.
   e. I'd feel sick.
   f. I'd like it.
   g. Remarks—

4. Suppose you could be a grown-up right away, how would you feel?
   a. I'd be glad.
   b. I wouldn't want to because of school or other activities first.
   c. I'd have children.
   d. I'd be [some adult occupation].
   e. Rejection of adult responsibility.
   f. I'd rather be small.
   g. I'd have adult authority and independence.
   h. I'd have adult possessions.
   i. Remarks—

5. What person do you think you are most like?
   a. Mother.
   b. Father.
   c. Sibling.
   d. Cowboy hero.
   e. Friend.
   f. Another adult.
   g. Myself.
   h. Remarks—

6. Suppose you could have a wish come true, what would you wish?
   a. Food.
   b. Toys, clothes, pets, etc.
   c. Siblings.
   d. More affection and security.
   e. Less punishment.
   f. Good time.
   g. Didn't have to go to school.
   h. Alternate sex.
   i. Athletic hero.
   j. Remarks—

Appendix B

CHILD-REARING PRACTICES INTERVIEW WITH THE MOTHER

Presentation of the Interviewer: Ask the questions at the top of each of the following sections. Try to maintain a spontaneous flow of description and remarks from the mother. Check answers to any of the questions as relevant data appear in her conversation. Do not ask specific questions and do not attempt to direct the mother's remarks by any show of preferential interest. Before each main topic of the interview is completed guide the conversation toward the questions she has not answered.

Presentation to the Mother: People aren't sure about what is best in bringing up children. We don't even know what mothers in general actually do in handling their children. As you know we are talking with a large number of mothers about this and we hope we can be more sure of these things when we are finished.

FEEDING

Take the problem of feeding, what happened with ————'s feeding and eating?

A. *Meeting Feeding Needs of Infant*

Yes No

1. Was infant awakened for bottle feedings?
2. Was hungry infant required to wait for a scheduled bottle feeding?
3. Was infant unable to take milk easily?

B. *Meeting Feeding Needs of Child*

1. Has child disliked any foods so that he won't eat them?
2. May child eat as much as he wants at mealtimes?
3. Does child eat between meals?
4. Has child shown a desire for a specific food to the exclusion of other foods?
5. Does child vomit easily?
6. Has child been markedly overweight?
7. Has child been markedly underweight?

C. *Nutritional Practices With Child*

1. Does child consume a quart of milk a day?
2. Does child have fruit or fruit juice once a day?
3. Does child have an egg every day?
4. Does child have a leafy vegetable once a day?
5. Does child have fresh meat daily?
6. Has child had Vitamin D (or sun lamp) regularly through winter season?
7. Has child had tonics or other supplementary vitamins?

D. *Emotional Factors at Feeding Time*

1. When the child doesn't eat something the parents usually:
   ———— *a.* Ignore it.
   ———— *b.* Encourage child to eat.
   ———— *c.* Coerce the child to eat.
2. Does child eat with other members of the family?
3. Has child cried in connection with mealtimes?
4. At what age was last bottle discontinued?
5. Did child want bottle at time it was discontinued?

INDEPENDENCE

We don't know enough about what five year olds can do for themselves and what are some of the things they don't do for themselves. Tell me about ————.

A. *Expression of Independence*

Yes No

1. Does child usually wash his face (except for atypical circumstances such as fatigue, special occasions, etc.)?
2. Does child usually wash his hands?

3. Does child usually wash his teeth?
4. Does child usually bathe alone?
5. Does child usually wash his hair?
6. Does child usually dress himself?
7. Does child play outdoors without adult supervision?
8. Does child perform chores or help around the house?
9. Does child refuse help from parents for things he knows how to do?

B. *Expression of Dependence*

1. Does child often request help for a task he has formerly accomplished or probably can do alone?
2. Does child without obvious provocation or difficulty often demand attention or affection (by whining or wanting to be embraced and babied)?
3. Does child go to parents for comfort or support because of minor accident or difficulty (other than quarrels)?
4. Does child go to parents about quarrels with children?
5. When the child has a quarrel with a playmate, does the parent intervene?

C. *Severity of Training For Independence*

1. When the child is in pain:
   ——— *a.* He is soothed or reassured.
   ——— *b.* His pain is ignored.
   ——— *c.* He is reproved for the expression of pain.
2. When the child is lonely or afraid:
   ——— *a.* He is soothed or reassured.
   ——— *b.* His feelings are ignored.
   ——— *c.* He is reproved for the expression of fear or loneliness.
3. When the child makes errors in tasks he has done:
   ——— *a.* He is reassured or aided.
   ——— *b.* His errors are ignored.
   ——— *c.* He is reproved for his errors.

D. *Safety Training*

——— *a.* Child is repeatedly warned to avoid harmful situations.
——— *b.* Child is occasionally taught to avoid harmful situations.
——— *c.* Child is not taught to avoid many harmful situations.

TOILET TRAINING

Another part of bringing up children is training them to use the bathroom. Tell me about ———.

A. *Initiation of Training*

Yes No

1. Was the time for the child's bowel movements predictable?
2. At what age was child first placed on the toilet?
3. How many times a day was the child put there?
4. How long did the child remain?
5. Did the child use the toilet during the early placements?
6. Did child scream or cry at the beginning of training?
7. After training was started did the mother stop and begin again later?

B. *Severity of Training*

1. At what age did child have all bowel movements in the bathroom?
2. At what age was child usually dry all day?
3. At what age could child usually go through the night without wetting or being picked up?
4. At what age did child go to inappropriate part of house for bowel movements or urination?
5. Does child ever sporadically wet during the day?
6. Does child ever sporadically wet during the night?
7. Was child scolded for soiling?

8. Was child ridiculed for soiling?
9. Was child hit for soiling?
10. Was child talked to constructively about soiling?
11. Did child have to wear soiled clothes as punishment?
12. Did child have to smell or contact soiled clothes?
13. Has child often gone more than one day without a bowel movement?
14. Has child had diarrhea?
15. Has child cried or been fearful after soiling during the day?
16. Has child cried or been fearful after soiling at night?
17. Does an adult reassure, quiet or comfort child after soiling?

C. *Interest of Mother*

1. During early training did the mother stay with the child in the bathroom?
2. Does the mother now stay with child?
3. Does the mother look at the child's stool?
4. Does the child routinely tell the mother when he has had a bowel movement?
5. Were child's messes disgusting to the mother?

AGGRESSION

We believe that it's perfectly natural for young children to get mad easily. What sort of situations seem to make ——— angry? How does it work out? What do you and your husband try to do?

A. *Expression of Aggression*

Yes No

Mother

When he is angry at the mother:

1. Does he try to strike her?
2. Does he scold her, call her unpleasant names?
3. Does the child leave the room, sulk, or become silent?
4. Does he cry?
5. Does he hold his breath, scream, roll on the floor, etc.?
6. Does he break objects or do other spiteful things?
7. Does he try to control himself?

When the child is angry with the mother does the mother:

8. Give in to the child's wishes?
9. Separate herself from the child?
10. Try to divert the child's interest?

When the mother scolds or punishes him:

11. Does he try to defend himself by explaining his circumstances?
12. Does he try to defend himself by counter-accusations?
13. Does he spontaneously promise better behavior?
14. Does he apologize?
15. Does he offer or agree to restitution or compensation?
16. Does he involve his father?

Father

When he is angry at the father:

1. Does he try to strike him?
2. Does he scold him and call him unpleasant names?
3. Does he leave the room, sulk, or become silent?
4. Does he hold his breath, scream, roll on the floor, etc.?
5. Does he cry?
6. Does he break objects or do other spiteful things.
7. Does he try to control himself?

When the child is angry at his father does the father:

8. Give in to the child's wishes?
9. Separate himself from the child?
10. Try to divert the child's interests?

When the father scolds or punishes him:

11. Does he try to defend himself by explaining his circumstances?
12. Does he try to defend himself by counter-accusations?
13. Does he spontaneously promise better behavior?
14. Does he apologize?
15. Does he offer or agree to restitution or compensation?
16. Does he involve the mother?

Yes No

Children

When he is angry at other children:

1. Does he strike them?
2. Does he scold them and call them unpleasant names?
3. Does he cry?
4. Does he leave, sulk, or become silent?
5. Does he scream, spit, or lose control?
6. Does he break objects or do other spiteful things?
7. Does he try to control himself?

B. *Severity of Training*

1. Is child usually spanked or hit for being aggressive toward the mother?
2. Is child usually scolded or reprimanded for being aggressive toward the mother?
3. Is child deprived of some privilege for being aggressive toward the mother?
4. Is child usually spanked or hit for being aggressive toward the father?
5. Is child usually scolded or reprimanded for being aggressive toward the father?
6. Is child deprived of some privilege for being aggressive toward the father?
7. Is child usually spanked or hit for being aggressive toward children?
8. Is child usually scolded or reprimanded for being aggressive toward children?
9. Is child deprived of some privilege for being aggressive toward children?
10. Do parents explain, interpret or reason with child about aggressive behavior?
11. Do parents ever encourage or compliment the child for aggressive behavior?
12. Does child rarely show anger toward mother?
13. Does child rarely show anger toward father?
14. Does child rarely show anger toward children?

CLEANLINESS

Some children don't seem to mind a little dirt and others don't like it at all but we don't know just how this goes. How is ———?

A. *Permissiveness*

Yes No

1. Were infant's or child's diapers changed immediately or very shortly after soiling?
2. Was child allowed to crawl on the ground or on a floor which might not have been clean at the time?
3. Did child play with feces?
4. Does the child go around indoors with soiled hands and clothes?
5. Does child remain clean for a prolonged period of time (all day Sunday, a long visit)?
6. When the child comes in from play, is he dirty?

B. *Severity of Training*

When the child gets dirty in dress or school clothes:

1. Is the child spanked?
2. Is the child scolded, reprimanded or ridiculed?
3. Does the mother clean him up without much comment?
4. Is he punished by having to wear the dirty clothes?
5. Is the activity prohibited?
6. Does the mother do nothing?

C. *Assumption of Responsibility*

1. Does child initiate washing procedures?
2. Does child help in cleaning up his room or toys?
3. Does child initiate a change to clean clothes?

D. *Cleanliness Habits*

1. The child is bathed
   ——— *a.* every day
   ——— *b.* two to three times a week
   ——— *c.* one time a week or less.
2. The child's under clothes are changed
   ——— *a.* every day
   ——— *b.* two to three times a week
   ——— *c.* one time a week or less.
3. The child's neck and ears are washed
   ——— *a.* every day
   ——— *b.* two to three times a week
   ——— *c.* one time a week.
4. At what age did child use a fork properly?

SLEEPING

What about sleeping?

A. *Isolation*

Yes No

1. Has child usually slept in his own room?
2. Has child usually slept in room with parents?

B. *Resistance to Sleep*

1. Does child usually fall asleep readily?
2. Does child awaken upon such slight provocation as small noises?
3. Has child walked in sleep?
4. Has child talked in sleep?
5. Does child have nightmares?
6. Has child required non-nutritive objects (except the thumb) to suck in order to fall asleep?

C. *Deviations*

1. Is child afraid of the dark or of being alone in bed?
2. Has child repeatedly rocked in bed or crib before going to sleep?

D. *Meeting Emotional Needs*

1. Has child had pets or toys in bed?
2. Does parent comfort the child when he awakens during the night?
3. Is child kissed or "tucked in" bed?
4. Has child had a night light left on in his room or the hall?

SEX TRAINING

Although everyone feels that we should know more about the sexual reactions and curiosity of children, no one has bothered to find out what parents have noticed in their children. Would you mind telling me about ———?

A. *Permitting Expression of Sexuality and Sex Curiosity*

Yes No

1. Does the child know that babies are carried by a woman?
2. Does the child know a male is required for conception?
3. Has child frequently observed unclothed adults?
4. Has child frequently observed unclothed infants and children?
5. Has child ever participated in sexual examinations or play with another child?

B. *Severity of Training*

1. Has child been told sexuality can hurt or injure him?
2. Has child been told sexuality is pleasurable but for adults or for people in love?
3. Has child been told sexuality is a bad thing?
4. Has child been physically punished for sex behavior?
5. Has child been reprimanded for sex behavior?
6. Has child been told to avoid companions or adults because of sex behavior?

Conclusions: I think we've covered some of the most common aspects of child rearing. Are there any additional matters that have seemed important to you in the past or at present that we haven't talked about?

Appendix C

CHECK LIST OF CHILD'S NERVOUS MANNERISMS AND FEARS
(Child-Rearing Practices Interview with the mother)

1. Nail-biting
2. Nose-picking
3. Hair-pulling
4. Tics
5. Thumb-sucking
6. Masturbation
7. Head-banging
8. Rubbing body parts
9. Rituals
10. Other
11. Fear of injury
12. Fear of water
13. Fear of fire
14. Fear of animals
15. Fear of doctors
16. Other fears

Appendix D

CONDITIONS OF CHILD REARING
(Continued from the Child-Rearing Practices Interview with the Mother)

1. *Physical Similarity*
   - *a.* One parent and child are strikingly similar in appearance. They have the same hair, eye and skin coloring and also have the same general features and physique.
   - *b.* One parent and the child are somewhat similar in appearance. There is about the same similarity and discrepancy in appearance as occurs among kin. There are no striking differences, however.
   - *c.* The child's appearance is strikingly different in some respect from that of both adoptive parents. Features, physique or coloring may be obviously different.

2. *Evidence of Interest in Child Care*
   - *a.* Full time boarding or caring for child by relative or friend.
   - *b.* Part time—day care, nursery school, baby-sitting.
   - *c.* None.

3. *Health of Adoptive Mother Since Adoption*
   - *a.* Mother has rarely been ill.
   - *b.* Mother has had illnesses, necessitating going to bed or missing work.
   - *c.* Mother has had one or more illnesses necessitating hospitalization.
   - *d.* Mother has died.

4. *Health of Adoptive Father Since Adoption*
   - *a.* Father has rarely been ill.
   - *b.* Father has had illnesses, necessitating going to bed or missing work.
   - *c.* Father has had one or more illnesses necessitating surgery.
   - *d.* Father has died.

5. *Parental Contacts*
   - *a.* Parents spend most evenings on leisure activities together.
   - *b.* Parents spend some of their evenings together and pursue some leisure time activities together.
   - *c.* Parents rarely spend evenings on leisure activities together.

6. *Mother-Child Contact*
   - *a.* Mother plans all her daytime activities so as to include the child. She usually does not work, has few activities outside the home, and spends most of the day with the child.
   - *b.* Mother plans some activities to include the child, but may work part time or be active in a few groups so that she is not with the child all of its day.
   - *c.* Mother plans most of her activities in a way which excludes the child. She may work all day or devote her time to pursuits outside the home. Except for details of child's routine, she is rarely with the child.

7. *Father-Child Contact*
   - *a.* Father plans all of his leisure time activities so as to include the child.
   - *b.* Father plans some of his activities so as to include the child but may have some other interests which exclude him.
   - *c.* Father plans his activities so that he spends almost all of his time away from the child.

8. *Community Service*
   - *a.* At least one parent is very active in community service. Parent may hold office in civic organizations or work repeatedly for community projects without pay.
   - *b.* At least one parent is moderately active in community service. Parent may attend civic organization meetings, contribute services to drives, and occasionally work for community projects.
   - *c.* Both parents are usually inactive in community affairs.

9. *Emotionality of Mother*
   - *a.* When angry, mother usually expresses her feelings without restraint. She may scream, throw things, or lose control in a tantrum.
   - *b.* When angry, mother expresses her feelings overtly but does not lose control.
   - *c.* When angry, mother rarely expresses her feelings directly.

10. *Emotionality of Father*
   - *a.* When angry, father usually expresses his feelings without restraint. He may scream, throw things, or lose control in a tantrum.
   - *b.* When angry, father expresses his feelings overtly but does not lose control.
   - *c.* When angry, father rarely expresses his feelings directly.

11. *Routine*
   - *a.* The home routine is coordinated around a fixed and inflexible schedule.
   - *b.* The home routine is organized around some fairly fixed schedule but there are minor variations.
   - *c.* The home routine is organized around a slight schedule so that there are extensive and frequent variations in routine from day to day.

12. *Religion*
   - *a.* There is consistent observance of all religious practices and prohibitions. The family is devout.
   - *b.* There is moderate observance of some religious practices and prohibitions. The family attends church at least occasionally but some departure from religious teaching is found.
   - *c.* Family is not interested in religion. They do not attend church and children are not educated in religion.

13. *Need Achievement*
   - *a.* One or both parents strive to do some things as well as possible and in some respect are recognized in the community or considered to be outstanding.
   - *b.* One or both parents strive to perform some things well but not outstandingly.
   - *c.* Both parents are interested in expanding only as much effort as is required for satisfactory performance.

14. *Expressed Disapproval of Parents*
   a. Parents criticize and find fault with minute or unimportant details of child's behavior.
   b. Parents criticize only as realistically warranted by child's behavior.
   c. Parents rarely criticize and may tend to overlook or excuse shortcomings.

15. *Story Telling*
   a. Parent and child usually read a child's story or picture book together.
   b. Parent reads a story book to child. The child does not attempt to look at the written text or the pictures.
   c. Parent rarely reads child stories.

16. *Conversation Between Mother-Child*
   a. Whenever mother and child are together, conversation is almost continuous with both participating.
   b. There is a fair amount of conversation between mother and child, but the child initiates or does most of the talking.
   c. The mother is not talkative and tends to discourage the child from chattering.

17. *Films*
   a. Parents exclusively attend movies which have been acclaimed for their artistic or dramatic value.
   b. Parents occasionally attend movies which have been acclaimed for their artistic or dramatic value.
   c. Parents rarely or never attend movies which have been acclaimed for their artistic or dramatic value.

18. *Radio (Politics)*
   a. Parents exclusively listen to forums, round tables, and news analysts on the radio.
   b. Parents occasionally listen to forums, round tables, and news analysts on the radio.
   c. Parents rarely or never listen to forums, round tables, and news analysts on the radio.

19. *Culture (Music)*
   a. Parents, though they may listen to other music also, frequently listen to opera or classical music.
   b. Parents almost exclusively listen to semi-classical music.
   c. Parents almost exclusively listen to popular music.

20. *Culture (Art)*
   a. Parents regularly attend art displays or collect art objects.
   b. Parents occasionally attend art displays or collect art objects.
   c. Parents neither attend art displays nor collect art objects.

21. *Culture (Literature)*
   a. Parents, though they may read other things also, read classics, outstanding novels, biographies, history, or literary magazines.
   b. Parents almost exclusively read book club selections and popular magazines.
   c. Parents almost exclusively read mysteries, comics, westerns, adventures, and pulp magazines.
   d. Parents read only the newspaper for recreation.

22 *Culture*
   a. Parents frequently play musical instruments, paint, or sculpture.
   b. Parents occasionally play musical instruments, paint, or sculpture.
   c. Parents never play musical instruments, paint, or sculpture.

23. *Recreation*

Indicate how frequently one or both parents engage in the following:

Frequently or Regularly	Occasionally	Rarely or Never	
			1. Movies
			2. Radio
			3. Television
			4. Traveling away from home on pleasure trips
			5. Legitimate theater
			6. Cards, checkers, chess
			7. Pool and billiards
			8. Gardening
			9. Camping, fishing, hunting
			10. Dancing
			11. Collections of (non-art) objects
			12. Sailing and motor boating
			13. Golf
			14. Tennis, badminton, squash, handball
			15. Lectures
			16. Reading
			17. Playing football, baseball
			18. Horse races
			19. Other:

24. *Mother's Original Educational and Vocational Aspirations*

a. Mother's original educational and vocational aspirations are markedly superior to her present life situation.

b. Mother's original educational and vocational aspirations are slightly superior to her present life situation.

c. Mother's original educational and vocational aspirations are in line with her present life situation.

25. *Father's Original Educational and Vocational Aspirations*

a. Father's original educational and vocational aspirations are markedly superior to his present life situation.

b. Father's original educational and vocational aspirations are slightly superior to his present life situation.

c. Father's original educational and vocational aspirations are in line with his present life situation.

26. *Family Incompatibility*

a. The parents have contemplated divorce or trial separation.

b. There is evidence of deep incompatibility between parents but not sufficient to lead to a breakdown of the home.

c. There are minor differences of interest and opinion between parents but they are basically compatible.

d. The parents are harmonious and compatible.

APPENDIX E

MULTIPLE RATING SCALE

(A copy of this form is to be rated independently by both the psychologist and social worker)

1. *Acceptance of Child*
   - *a.* Parents completely accept the adoptive child as their own. They note with pleasure physical or behavioral similarities between the child and members of the adoptive family.
   - *b.* Parents do not wholeheartedly accept the adoptive child as their own. They may observe a few faults of the child or respects with which he compares unfavorably with family.
   - *c.* Parents do not accept the adoptive child as their own. They regret the adoption and would, at one time, have liked to have annulled it if possible.

2. *Solicitiousness Towards the Child*
   - *a.* Mother watches or fusses over child almost constantly. Is worried frequently and exaggerates the significance of minor ailments or difficulties.
   - *b.* Mother is concerned about the child's safety and health but trusts the child alone and allows him to take ordinary risks.
   - *c.* Mother is so unconcerned in major matters about the child's safety and health as to appear neglectful and irresponsible.

3. *Affectionateness of Mother*
   - *a.* Mother is overly affectionate with child. She kisses and fondles the child so frequently during the day that she probably interrupts the child's activities.
   - *b.* Mother is frequently affectionate with child. She will fondle and kiss him often but not to the extent of interfering with the child's activities.
   - *c.* Mother rarely fondles or kisses child.

4. *Accelerational Attempt*
   - *a.* Parent gives special training to child in order to assure his superiority with respect to other children.
   - *b.* Parent gives special training to child in order to assure his equality with other children.
   - *c.* Parent gives no special training to child in order to assure his equality with other children.
   - *d.* Parent exerts special measures to maintain immaturity of child by comparisons with other children.

5. *Flexibility of Parents' Expectations*
   - *a.* Parents have fixed and rigid ideas concerning child's education and vocation to which the child is expected to conform.
   - *b.* Parents have somewhat definite ideas concerning the child's education and vocation but do not insist that child conform.
   - *c.* Parents have no definite ideas concerning child's education and vocation.

6. *Mother's Enjoyment of Child*
   - *a.* The mother shows a great deal of real enjoyment and pleasure in most aspects of her child's behavior.
   - *b.* The mother shows some real enjoyment and pleasure in most aspects of her child's behavior.
   - *c.* The mother shows little real enjoyment and pleasure in most aspects of her child's behavior.
   - *d.* The mother shows no real enjoyment and pleasure in most aspects of her child's behavior.

7. *Mother's Reaction to Child*
   - *a.* Mother is critical of the child, describing his behavior in unfriendly and uncomplimentary ways.
   - *b.* The mother describes the child's behavior in an evaluative manner as if seeking to establish a value for herself.
   - *c.* The mother describes the child's behavior in an objective manner but accounts for it by favorable and protective explanations.
   - *d.* The mother is unable to recognize the child's behavior for what it is because of a marked protective bias.

APPENDIX F

RATING SCALE (HOME)

(Provided by the social worker)

1. *Physical Plant*
   - *a.* Home is in every way sufficient for meeting the child's physical needs with respect to warmth, quiet, cleanliness, toilet facility, ventilation, sunlight, and freedom from vermin and hazards.
   - *b.* Home is fairly sufficient for meeting physical needs (See *a*), but may be lacking in one or two respects.
   - *c.* Home is lacking in many requisites for meeting physical needs of child.

2. *Outdoor Play Space*
   - *a.* There is a large yard, lot, or park near the home where the child plays freely.
   - *b.* There is a small lawn, back yard, court, or play street near the home where the child plays freely.
   - *c.* There is little or no space outdoors where the child plays freely.

3. *Maintenance of Home*
   - *a.* The exterior of the home and any surrounding ground are very well maintained, and there is evidence that considerable time and care has been invested.
   - *b.* The exterior of the home and any surrounding ground are sufficiently well maintained that they appear tidy, but there is less time and care required for the upkeep.
   - *c.* The exterior of the home and any surrounding ground are not well maintained.

4. *Ownership of Home*
   - *a.* Parents own the house they live in.
   - *b.* Parents rent the house they live in.
   - *c.* Parents pay rent for a public type building, e.g. apartment house, hotel.

5. *Neatness*
   - *a.* Home is meticulous with everything in place. There are no misplaced toys or equipment either inside or outside.
   - *b.* The home is generally clean and neat but there is some disarray as if a few items had been recently in use.
   - *c.* The home is characterized by disarray. There are evidences that the home has not been recently cleaned.

6. *Stability of Residence*
   - *a.* One or both adoptive parents have lived in the present neighborhood or social group practically all their lives.
   - *b.* One or both adoptive parents have lived in the present neighborhood or social group ten years or more.
   - *c.* One or both adoptive parents have lived in the present neighborhood or social group five years or more.
   - *d.* Both parents are relatively new to the community.

7. *Contacts with Other Children*
   - *a.* Child has numerous playmates who are close in age (± one year) near the home.
   - *b.* Child has one or two playmates near the home or siblings of approximately his age.
   - *c.* Child has no other children or siblings of approximately his age near the home with whom he plays.

8. *Sociability (Visitors)*
   - *a.* The family has guests (including relatives and friends) frequently.
   - *b.* The family has guests (including relatives and friends) occasionally.
   - *c.* The family rarely has guests.

9. *Family Group Recreation*
   - *a.* Family enjoys group activities, e.g., they engage in family games, hobbies. They enjoy occasional excursions, picnics, carnivals, trips.

b. Family sometimes engages in group activities but these participations are not usually wholly pleasurable. One of the family members may become upset or lose interest.

c. Family enjoys group activities. They either do not engage in them or the activity frequently ends unpleasantly.

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A Study of Adoptive Children: II. The Predictive Validity of the Yale Developmental Examination of Infant Behavior

By

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Rutgers University

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A Study of Adoptive Children: II. The Predictive Validity of the Yale Developmental Examination of Infant Behavior[1]

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Introduction

THE EXAMINATION developed at the Yale Clinic under the pioneering leadership of Dr. Arnold Gesell has become widely known and in many areas is used as the principal aid in the placement of adoptive children. Despite its wide acceptance and important role in many practical situations, the validity of this infant examination has never been explored by suitable investigation. Since Cattell (5),[2] Anderson (1), and Bayley (3) have been unable to find any evidence of useful validity for their infant examinations, some reasonable doubt concerning the validity of the Yale examination has arisen.

There are at least two possible interpretations of a general question concerning the validity of an infant examination. One interpretation concerns the question of whether or not the infant examination provides a relevant and acceptable evaluation of developmental status at the time of the infant examination. Gesell has commented on this aspect of validity in the following manner:

> Fundamentally the validity of the schedule here offered depends on the validity of the norms, the legitimacy of the category classi-

[1] The staff of the project wishes to express its appreciation to Dr. Donald Young, Director of the Russell Sage Foundation, and to Dr. Carl Hovland and Dr. Milton Senn of Yale University. The nature and the quality of this effort have been greatly influenced by such friends and advisers as Dr. Joseph Baldwin, Dr. Nancy Bayley, Dr. Harold Jones, Dr. Neal Miller, Dr. Robert Sears, and Dr. Helen Thompson. We are indebted also to Dr. Leonard Cottrell, Dr. Liselotte Fischer, Dr. Else Frenkel-Brunswik, Dr. Marjorie Honzik, Dr. Mary Cover Jones, Dr. Frederick Mosteller, and Dr. A. J. J. Van Woerkom. We are particularly grateful to the adoptive families who participated in this investigation, the child placement agencies who cooperated with us and guided our efforts, and to Adelaide Piscitelli, David Macklin, David Jenkins, and Peter Field who helped in the analysis of the data and the preparation of the manuscript.

[2] References for the present report are listed on page 114. The pagination of the present report is continuous with the first report of this series, entitled "A study of adoptive children: I. Interviews as a source of scores for children and their homes," *Psychol. Monogr.*, 1956, Vol. 70, No. 1 (Whole No. 409).

fications, the appropriateness of each item for the category to which it is allocated, the soundness of the concept of maturity level, and the justness of using a sample of the child's behavior to indicate that level . . . (7, p. 219).

Our investigation is not concerned with validity of the infant examination as a basis for evaluating the developmental *status* of an infant.

Our investigation is concerned with a second aspect of validity. What are the predictive implications of the knowledge of the current developmental status of an infant provided by the infant examination? Gesell and his associates may also be quoted with respect to the aspect of validity:

> How consistent over a decade and more have been these mental-growth careers? In no instance did the course of growth prove whimsical or erratic. The behavior biographies give clear evidence of a high degree of latent predictability, even in infancy (6, p. 49).

> One of the greatest advances that we know of in adoption practice in the last twenty years has been the policy of giving careful developmental or psychological examinations to every single adoption candidate. Such examinations indicate whether an infant or child is of "normal" mentality, and therefore a good adoption candidate, or if he is so subnormal that he is not a fit candidate. They further can to some extent discriminate within the normal group children among average, above-average, and below-average endowment—thus giving a good clue as to what kind of home each child would best fit (10).

It is this predictive aspect of validity that provides the major question of the present investigation.

Our study of the predictive validity of the infant examination required measures for three classes of information. One class of information emerged from the infant examination; the second class of information described the child at the time of the follow-up study; the third class of information described some relevant facets of the child's environment.

It should be emphasized at the very beginning that a validity study is meaningful only to the extent that it shows evidence of relationship between the device to be validated and some criterion. Specifically, the most informative result of our investigation could emerge in those instances where our analyses reveal correlations between some aspect of the infant examination and some aspect of our criteria of development. Absence of relationship can be due to unreliability in the criterion, restrictions or inconsistencies in the sample, and numerous other factors, including limitations of the measuring instrument which is to be validated. Such limitations include lack of intrinsic validity for the criterion under consideration and lack of sufficient reliability to enable the instrument to be meaningfully related with any criterion.

Because of the ambiguous status of lack of relationships between the infant examination and criteria for development, we have sought to use all possible facets of the infant examination, all available measurements of childhood development, and all defensible subsamples of our adoptive children in an effort to show evidence of predictive validity. We may state this differently by saying that we have sought exhaustively to disprove the hypothesis of no predictive validity for the infant examination. As a matter of fact, this is the only defensible rationale in such an investigation because one can never prove an hypothesis of no relationship.

In the following paragraphs it will be noted that we have used several samples and subsamples in our exploration of the predictive possibilities of the infant examination. Since some of our adoptive children were placed in their adoptive homes selectively as a result of the infant examination (evidence for this will

be provided later in this report), we have provided separate analyses for children who were placed in their adoptive homes *before* the infant examination and where presumably environmental differences resulting from selective placement could not be confounded with relationships between the infant examination and criteria for development.

Children who have been placed adoptively *after* the infant examination may not be ideal subjects for a validative study such as ours. Trends emerging for such children are suspect because they could occur as a consequence of confounding with environmental differences occurring as a result of selective placement. Such selective placement could result either from knowledge of true parents of the infants or from knowledge of the infants' standing on the infant examination. With respect to the danger of confounding as a result of knowledge of the true parents, we found a group of nonadoptive children living in their own homes; they provide a very desirable control. With respect to the possibility of confounding because of selective placement based on knowledge of the infant examination, we found certain measures of the environment to provide us with a desired control and means for analyses relevant to this particular selective placement hypothesis.

Because of numerous complexities introduced as a result of the practical nature of our investigation and as a result of the placement practices of social workers in southern Connecticut during the middle forties, some of our analyses are relatively easy to describe and others are relatively difficult to describe. Accordingly, we shall use simple subgroups in presenting the essential nature of our analyses. In our conclusions, we shall summarize the implications of our analyses for all the various measures and the various subgroups combined.

Since some of our discussions will be based upon a comparison of the relationships emerging from different subgroups, one might suspect that such differences are not due to the variables which we have in mind but are an artifact of some differences between subgroups such as range in test scores or such as age at the time the infant examination was administered, etc. It shall be apparent in our discussion of our subsamples that we have given proper consideration to these possibilities.

The Infant Examination

The infant examination developed by Gesell and his associates is not a psychometric test. It is a procedure for clinical examination and yields several kinds of descriptions and evaluations (7). Accordingly, any effort to evaluate the procedure must be concerned with its various facets and must attempt to validate them independently. In order best to describe the various facets, it would seem desirable first to describe the examination procedure in general. Our description will be brief, however, because authoritative publications are available which describe the examination fully, including the conditions under which the examination is given, the exact manner in which it is scored, and the precise nature of the norms employed (7, 8).

The infant examination procedure is based on observation of the infant's responses to a series of standard situations. These include response to the examiner, response to objects and situations, and in addition, certain reported responses contributed by the child's mother or nurse. The range of responses included in the examination procedure varies with the age of the child and with his developmental status:

it is unlikely that infants who differ from each other by several months in age are evaluated with respect to precisely the same kinds of responses. The infant examination procedure, like the Binet scales, changes in content for children of different ages. The opinion of many who employ the examination suggests that it may have its greatest value when administered to children whose ages lie between 12 and 40 weeks. (Some consider this to be due to the developmental pattern of infants; others consider it to be due to limitations in the content of the examination. Incidentally many practitioners claim that the examination may be used more reliably for identifying children who have a questionable developmental status than for distinguishing between children of superior developmental status.)

The examination yields part scores. These are available on the basis of an a priori classification of the items. This classification includes: fine motor, gross motor, linguistic, personal-social, and adaptive aspects of infant development. It is also common practice to combine the child's performance on these five parts of the examination procedure in order to provide a general estimate of infant development. It is customary to express the infant's developmental status with respect to developmental age equivalents. Such age equivalents are based on norms constructed from previous observations of children. It is possible, of course, to convert these developmental age equivalents to developmental quotients; this arithmetic adjustment for age, however, appears not to be a general clinical practice.

Although the examination provides a standard situation for observing the child, one finds diverse supplementary descriptions in the protocols. For example, in the examiner's written description of the child such words as mature, friendly, weak, etc., are often used. Some of these words occur with sufficient frequency in a set of protocols to justify their informal inclusion as an aspect or a part of the results of the examination procedure. In addition to such informal characterizations of the child and his responses, there are other descriptions that are more formal in their nature and have definite implications. For example, there are often diagnostic statements included with the examiner's description of the child, and some of these refer to the child's physiological or neurological status.

A principal feature of the examination is the general classification for the infant, a classification based upon a combination of the aspects of the child's development which are expressible formally in terms of age equivalent scores, the subjective impressions of the examiner, and various qualifying features which make the distinction between a clinical evaluation and a psychometric test. The classification of the infant was established with respect to levels, and included superior, high average, average, low average, dull, and sometimes such classifications as borderline and moron. It should be noted at the outset that in the case of many examinations no classification was given for the child. This ordinarily meant that for some reason or other the examiner was unwilling to commit himself with respect to the child's status, i.e., for some reason or other he considered the examination unsatisfactory or undependable. Sometimes this was due to some temporary indisposition on the part of the child. Occasionally, moreover, it occurred when the child's performance was definitely unsatisfactory and, if accepted at face value, would result in a very low or unfavorable classification. It is to the credit of the clinic and its individual examiners that they were extraordinarily cautious in classifying children whose performance was inferior. The procedure in questionable cases was to request further examination of the child.

The results of the examination were also expressed with respect to recommendations concerning the adoptability of the child (assuming that he was not already adopted). If, in the examination procedure, the child performed well (this usually was a basis for a confident examination), he was recommended as adoptable. Sometimes the recommendation was qualified and in some cases he was considered not adoptable. The recommendation of "not adoptable" was usually further qualified with the recommendation that the child be evaluated again at some later time. Other recommendations were made concerning the suitability of his current boarding or other temporary placement. For some cases it was suggested that the child was overplaced in the sense that the boarding home was too demanding or too stimulating for him; in other cases it was suggested that he was underplaced and that he could grow more rapidly in a stimulating home. It is difficult to determine in most cases how well the specific rec-

ommendations of the clinic were followed by the agencies or individuals requesting the examination.

It is probable that an examination would, in the case of many children, determine the immediate course of action (not necessarily the action recommended by the clinic, however). This seems particularly likely when one considers the conditions under which the infant test was given. An infant test could be initiated at the request of an adoptive parent, at the request of an agency handling the adoption, or at the recommendation of the court. Inasmuch as some one individual or a group of individuals had to take the initiative in securing an examination, it seems most likely that the results of such an examination would be used as an aid in planning the next step in the handling of the child. This possibility is anticipated in the introduction to the present report and provides one of the most obvious and also one of the most difficult complications in the present study.

It may be re-emphasized that the infant examination comprises many facets and that we should seek evidence for the validity of each of these various facets. They include the characterizations of the child, special diagnoses, developmental status with regard to the various parts of the examination and to the total examination; a general classification of the child based on performance on items and on general impression; recommendations with regard to adoptability, foster home, and other current circumstances. In some important respects the examination procedure was used cautiously; specifically, if a child did not perform well on the infant examination, subsequent examination was requested for him, classification may have been deferred, and presumably the possibility of immediate favorable placement was reduced. This means that concern was shown by the clinic for the possible untoward consequence of the spuriously low classification. It should be noted, however, that although the clinic itself tended to withhold classification until a satisfactory examination had been completed, it could not very well eliminate the possibility that a decision concerning the child would be made as a result of the first examination whether or not this examination were a satisfactory one from the standpoint of the clinic. If, for example, the outlook were unfavorable, this would be communicated to the agency and might prejudice their reaction to the child. At the very least, the qualified impression of the examiner would reduce the possibilities for a confident favorable placement of the child.

Since a second examination usually occurred as a consequence of a doubtful first examination, it is probable that children with more than one examination were classified more confidently on the final examination than they were on the first. It is not necessary, however, that a final examination should have a greater intrinsic validity than the first. On the contrary, there is some possibility that the results of the first examination could be prejudicial to the result of a later examination. Even if this possibility could rarely or never be demonstrably attributed to subjectivity among the examiners, it nevertheless seems quite possible that a qualified or unfavorable evaluation of the child at the time of the first examination could in many cases reduce the possibility of his having optimal opportunities for development. A qualified performance on the

first examination could, in effect, perpetuate the kinds of conditions that existed at the time of the first examination so that the possibility of change in development on the part of the child could be restricted. Thus, it not only seems possible that the relationship between the final infant examination and some later criterion for development could be confounded by opinions based on the first examination, but that the relationship between the first examination and a final infant examination could also be confounded by a perpetuation of the same kind of factors that influenced performance on the first.

Description of Subjects

Since our sample of subjects was drawn from children who had been examined in infancy at the Yale Clinic of Child Development, many important properties of our sample are determined by the kinds of cases to which the infant examination had been applied at the clinic. Our survey of the records there indicated that during the period beginning in 1942 and ending in 1947 the children to whom the infant examination had been administered fell into three major groups (only a few were exceptional to this grouping).

One group comprised children who were ill, defective, or in some respect a cause of concern to their parents. Almost all of these children were living with their true parents, and none of them was being considered for adoptive placement. They were suffering from all sorts of disorders, many of them diagnosable as Mongolism, hydrocephaly, microcephaly, cerebral palsy, convulsions, birth injury, etc. Although the infant examination may have contributed to a refined or confirmed diagnosis for these children or to an exact evaluation of their current developmental status, this group of children was brought to the clinic for examination because of apparent or suspected pathology. As far as we know, none of the infants in this group was brought in for examination because at that time he was being considered for adoptive placement or because there was some question as to whether or not he should soon be considered for adoptive placement.

The second group of infants brought in during this period comprised those who were being considered for adoptive placement. The infant examinations were desired by child placement agencies, or by courts, or by adoptive parents. Although many of these children had a developmental status which was very modest if not questionable[3] and although some of them were weak and possibly ill, all of these children were being considered as adoptive candidates. It would appear to us that the children being considered for adoptive placement and the children being considered for clinical evaluation were quite generally and consistently different from each other so that the discernible defects that characterized the clinical group were relatively inconspicuous among the group being considered for adoption. Apparently very few grossly ill or defective children were being considered for adoptive placement during this period.

There was a third group of children examined during this period. They were

[3] It may be noted that for our younger sample the mean and standard deviation of the General Maturity Quotient on the infant examination were 96.60 and 15.77, respectively. Only one per cent of these children had General Maturity Quotients below 60, 15 per cent were 60 or above but below 80, 33 per cent were 80 or above but below 100, 46 per cent were 100 or above but below 120, and 5 per cent were 120 or above.

living with their true parents and were examined as a part of the study of prospective members of the Yale Clinic Nursery School. This group was a relatively favored group; many of their parents were graduate students or members of the Yale faculty.

In our investigation, we drew our principal samples from the children who had been considered for adoptive placement. This means that very few, if any, grossly defective infants contribute to our results concerning the predictive validity of the Yale Developmental Examination. One should not generalize the results of our investigation to a possible use of the infant examination as a means of distinguishing between grossly defective children who are not adoptable by usual standards and questionably adoptable children whose development is slow or may have been retarded. Since the grossly defective or ill children did not appear in the group being considered for adoptive placement, one could suppose that for the most part these children are identifiable without the aid of the infant examination. Accordingly, as the infant examination was used in the Yale Clinic of Child Development during this period, its value as an aid in adoptive placement appeared not to rest on its value in making distinctions between the obviously ill or grossly defective and the infants of questionable development. We shall attempt to validate the use of the infant examination as an aid in the evaluation of infants being considered for adoptive placement.

Since the proper use of the infant examination may depend greatly upon the skill of the examiner, and since it is possible that, to an important degree at least, infant examinations are a standard medium for the skillful clinician to make his observations, it was decided that a study of the predictive validity of the examination should be based on the protocols of the *most approved* examiners.

Our sample of subjects is also influenced by the fact that we were interested in the predictive validity of the examination when applied to infants, particularly adoptive infants. As a consequence, we excluded from consideration all children who did not receive their first examination before they were 14 months of age.[4] Thus we are studying the predictive validity of an *infant* examination; we are not studying the predictive validity of an examination for very young children.

The records indicate that the examiners of the Yale Clinic of Child Development were very cautious in their evaluations and recommendations. It is amply evident that they sought to protect the adoptive children from a negative evaluation which could have been spuriously low or could have had spuriously negative implications. It would appear that they sought also to protect the adoptive parents from adoptive infants of questionable developmental potential. Because of these precautions, many of the infants were not promptly classified by the examiners. Instead, it was recommended that the infant be returned at some later time for further examination. It was further recommended that adoptive procedures be delayed until a more confident evaluation of the infant was possible. Accordingly, our samples could be seen as comprising children who had been confidently classified at the time of their first infant examination and children who had not, and were in turn

[4] Much of our discussion of the infant examination will refer explicitly to subgroups who were between 12 and 40 weeks of age at the time of the infant examination.

subject to further examination. We made independent studies of the predictive implications of the infant examination for subgroups of children who differed with respect to the number of infant examinations they received. The various subgroups provided the same implications with respect to the question of the predictive validity of the infant examination. As could be imagined, however, the analyses for the children who had but one infant examination were the most simple; accordingly these are the analyses that receive a particular emphasis in the later sections. These analyses have the additional merit of being based on children whose first infant examination was considered to be most dependable.

One major characteristic of the sample was determined arbitrarily by us and had little to do with the testing practices of the clinic. This was the question of the age of the children at the time of our follow-up inquiry. In general, we wished to base our study on children who were as old as possible. In this way we could have not only knowledge of the children over a relatively long period of time, but we could also take advantage of the fact that there are more satisfactory measuring devices available for older children than there are for relatively young children. There were too few children in adolescence at the time of our investigation to enable us to make a satisfactory study of this stage of life. We believed that children in the first grade were in many cases going through a kind of turmoil or a period of uncertainty and rapid change, so that they would not be ideal children for a predictive study. This left us with two groups of children from which to choose; the five-year-olds who were old enough to test in a reliable manner, but not yet in the throes of the first grade, and the seven-, eight-, and nine-year-olds who were past the throes of the first grade but not yet involved in the preadolescent changes which assume such remarkably different patterns in different children. Sound arguments could be advanced favoring either the preschool group or the school group as the more appropriate for examining the predictive validity of infant examinations. Because of this, we decided to employ both samples, and we hope that the use of two samples of different ages will enable us to provide an element of replication in our study so that the implications for one sample can serve to confirm or to challenge the implications for the other sample. One hundred fourteen children were included in our younger sample, and 81 in our older sample.

We began our investigation by arranging a roster of adoptive children who had been examined before 14 months of age by approved examiners and who at the time of our follow-up inquiry would be at the proper age for either our younger or our older sample. In order to explore the nature and the degree of selective factors in our attempts to reach adoptive children for further study, we selected 170 names from our roster of younger children and sought intensively to include all of these 170 children in our study. The adoptive arrangements for 40% of these were handled independently and the adoptive arrangements for 60% of them were handled by a child service agency. It is interesting that we succeeded in including 56% of each of these groups in our study. (The balance of our younger sample of 114 and our older sample of 81 was secured in a similar way, except that accessibility became an important factor and relatively less effort was made to reach some

of the cases who were distant, uncertain, or in some other respect presented complications.) It should be remarked that the families whose child had been placed independently were found to be cooperative with our study wherever we were able to reach them. The independent families who did not participate in our study were without known address, living in some distant part, or willing to disregard our inquiry.

Since we undertook our investigation in the expectation of providing research information that would be of value to child placement agencies, we sought to work closely with these child placement agencies, and tended to regard ourselves as their research staff. In the case of all agency placements, we called on the responsible agency, described our research plan to them, and asked them to help us to secure the interest and cooperation of the adoptive families. It is obvious that our agency placements were screened in some way or other by the agency. We cannot be sure how this may have affected the outcome of our study but it certainly did not prevent us from studying many families where the adoptive situation was uncomfortable either because of probable limitations in the home or in the child.

In any study such as the present one, one must be aware of the possibility that the children available for follow-up inquiry are in some important respect different from those not available, and as a consequence, the results of the investigation are in some way qualified and their general applicability limited. Because of this we made elaborate comparisons (with respect to infant records) between the younger children included and those not included in our follow-up study.

Our total roster of younger adoptive children who had been examined in infancy before 14 months of age and whose examinations were conducted by approved persons comprised 310 names. As indicated in an earlier paragraph, we made an intensive attempt to include a group of 170 of these children in our sample, and succeeded in including 95 of them. An additional 19 younger children were included on a "first come, first served" basis. Thus our study of the younger children is based on a total group of 114. Accordingly, our comparison between those available for a follow-up study and those not available for follow-up study involves the 114 younger children we had seen and the 196 younger children we had not seen.

With respect to the kinds of information that were descriptive of the infant, the results of our comparisons are reassuring. There was no reliable difference between the children we saw and the ones we did not see with regard to such factors as prematurity at birth, complications at birth, physical deviations, age at leaving the hospital, general maturity quotient on the infant examination, classification on the infant examination, outlook on the infant examination, examiner's recommendations concerning adoptability, and advice concerning the care of the child at time of infant examination. Furthermore, there were no differences with regard to such informal designations as active, attractive, attentive, sustained drive and interest, and stable. There were two such informal designations, *socially responsive* and *mature*, which offered some evidence of differences between the children in the follow-up group and those not in the follow-up group.[5]

[5] Since so few of the numerous comparisons show a trend, we may suspect that these trends arose by chance.

The reader may suspect that the children included in our study were different from those not included in our study with respect to the attainments or circumstances of the true parents. Although our data were not complete, we made comparisons between those seen and those not seen, with respect to such factors as the education and the occupation of the true father, and the education, occupation, and health history of the true mother. With regard to these classes of information, there was only one indication of a reliable difference; it was found that the true fathers of the children not included in our study had slightly, but reliably, higher educational attainments than the fathers of the children included in our follow-up study.

With respect to the kinds of early information which are not descriptive of the infant per se, but are descriptive of his care and general circumstances, we find that our comparisons yield some reliable trends. The children who went into an adoptive home after their first preliminary placement were somewhat more available to us than the others. This may suggest that adoptive parents who receive their children relatively early are more confident and cooperative about adoptive matters, including follow-up studies, than are parents who got their children after several preliminary placements. The examiner appears to have had some effect on the availability of the children for our study. We had learned in our interviews with the adoptive parents that in some cases the parents were in strong disagreement with the examiner and were displeased. Possibly displeasure arising from the examiner could have made some of our adoptive parents unwilling to cooperate in the follow-up study. This possible difference in the examiner cannot be shown to be due to intrinsic differences in the child (so far as we could discover, there was no practice in the Clinic that would involve giving all the "tough" cases to one examiner, etc.). Concerning the implications of differences among examiners, we have found that those examiners whose cases were underrepresented in our follow-up study tended in general to be examiners whose infants had general maturity quotients that were relatively low. Some examiners either drew relatively inferior children or were relatively pessimistic in evaluations of their children. Such differences among examiners are consistent from one test to another.

With respect to the data which are available to us, at least, there appear to be no important differences between children that we were able to include and those we were unable to include in our study. At least, any differences which our comparisons suggest cannot be seen to qualify the implications of our analysis.

Let us summarize our sampling procedure and provide a brief description of our samples. Our study is concerned with two major samples of adoptive children. There was one group of 114 *younger* children, most of whom were in their fifth or sixth year and none of whom was involved in the first grade. There was a second group of 81 *older* children. Most of these children were in their eighth or ninth year and none of them was in the first grade. Agency and independent adoptive placements were represented in both our younger and older sample, but not in equal proportions. Forty per cent of the younger sample (i.e., those more recently placed) were handled independently of any child placement agency, whereas 20% of the older sample were independent place-

ments. Almost all of the children who had been placed by an agency were placed in their adoptive homes *after* they had received an infant examination, and we may suspect that the results of the infant examination may have been a factor in the agency's selection of the adoptive home. Almost none of the independent placements were placed in adoptive homes *after* they received an infant examination; accordingly, we have no reason for suspecting that the infant examination could have been generally important in the adoptive placement of the children who were handled independently.

Our report makes incidental use of a third sample of 35 children who live with their true parents and who were examined in anticipation of their attendance at the Clinic nursery school. This group was employed primarily as a control group in our study.

In the course of our validity analyses, it was necessary for us to make two kinds of distinctions among our children. First, we were interested in whether or not the child was placed in the adoptive home before the infant examination; this is relevant to the possibility of confounding. Second, we were interested in whether or not the first infant examination was optimal from the standpoint of possible validity; specifically, we were interested in whether or not the first examination permitted the examiner to classify the infant promptly and whether or not it was made at the best possible age to show validity. (Experts had advised us that the Yale infant examination may be most valid when it is given between the ages of twelve and forty weeks. It was indicated that infants under twelve weeks were too young to show a repertory of behavior that would permit valid evaluation, and it was indicated also that the growth norms for the items comprising the examination procedure were of such a nature as to make distinctions between older infants relatively inexact, certainly less exact than those possible for infants under forty weeks. This presumptive feature of the growth norms is congruent with the tables published by Gesell and Thompson [8].)

Table 1 provides a summary of our sample of adoptive children and a classification from the standpoint of relevant subsamples. It may be noted that 62 of our younger children received their first infant examinations at what was considered an optimal age and were classified as a result of the examination. Our division of these children into the 32 who were placed in their adoptive homes *before* the infant examination and the 30 who were placed in their adoptive homes *after* the infant examination is explicitly involved in one phase of our analysis and we have referred to these as the selected "before" and the selected "after" groups, respectively. Since we shall be involved in certain comparisons between these two groups, it should be noted that the means and the variabilities of these two groups are comparable with each other, not only with respect to age at the time of the first infant examination, but with respect to status on the first infant examination, later Binet IQ, and other relevant data.

Criteria of Development

There are many published reports based on the Yale Developmental Examination of Infant Behavior. Among them various statements may be found which imply that the examination procedure has a predictive significance for numerous different aspects of child development. So far as the writer is aware, however, there is no published statement

TABLE 1

A CLASSIFICATION OF THE CHILDREN WHO PARTICIPATED IN THE STUDY

Sample	The first infant examination led to an unqualified classification and was administered between the ages of 12 and 40 weeks*	The first infant examination did not result in a confident classification and/or examinations were administered after 40 weeks of age**	Total
I. THE YOUNGER ADOPTIVE SAMPLE:			
A. Infants placed in adoptive homes *before* the infant examination	32	22***	54
B. Infants placed in adoptive homes *after* the infant examination	30	30	60
Total	**62**	**52**	**114**
II. THE OLDER ADOPTIVE SAMPLE:			
A. Infants placed in adoptive homes *before* the infant examination	16	10	26
B. Infants placed in adoptive homes *after* the infant examination	37	18	55
Total	**53**	**28**	**81**
III. THE NURSERY SCHOOL SAMPLE (normal children living with their true parents and examined in infancy as part of plans for the Clinic Nursery School)			*35*

* Experts had advised us that the infant examination may be most valid when given in the 12 to 40 week range.
** Many of the children were not placed in adoptive homes until they had had two or more examinations.
*** Two of these were examined before 12 weeks; one at 9 weeks, the other at 11 weeks of age.

specifying the criteria appropriate for validating any of the possible predictive implications of the infant examination. This creates a difficult situation for one who seeks evidence for the predictive validity of the infant examination. If one were to be narrowly selective in deciding upon appropriate criteria, one would necessarily run the risk of omitting aspects of development which in the minds of some interested persons could be the basis for the most relevant of criteria. If, however, one wishes broadly to explore the predictive implications of the infant examination, two difficulties must be anticipated. One of these is the difficulty which is necessarily associated with gathering data relevant to numerous and diverse criteria of child development. The second difficulty emerges from the fact that standardized, generally applicable measures have not been developed for the personal and social development of children. For the most part, the devices available for studying the personal and social development of children are clinical procedures that are not only unvalidated but are of such a nature as to make validation most difficult.

Since we sought evidence for the predictive validity of the infant examination, we decided to measure and assess our children in all *feasible* respects. As we have indicated elsewhere, however, the fact that our children are adoptive children and that their availability to us is a result of the voluntary cooperation of their parents greatly qualifies what is *feasible*. Our examination procedure must be not only extraordinarily inoffensive and efficacious, but it must respect the tender status of adoptive children in our society.

In the following paragraphs we shall

describe the various criteria that were available to us. Some of the criteria, such as measures of intelligence, are tried and true; others, such as some of the scores emerging from the mother's description of the child are novel, untried, and without evidence of a high degree of reliability. With regard to the novel and untried criteria which we shall employ, we doubt if they should be depended upon to indicate the degree or precision with which such criteria might be predicted by the infant examination. Nevertheless, we believe that they possess sufficient reliability to satisfy a useful purpose. Specifically, if the infant examination has a predictive validity for the aspects of behavior represented by our novel criteria, we believe that the criteria we use will be sufficient to show this possibility.

In general, we hope to show evidence that the infant examination has predictive validity for the aspects of development which may be represented in our investigation. Since we use numerous criteria, it is not implied that we consider the infant examination committed to the prediction of all such criteria as these. In effect, we shall proceed to test a series of null hypotheses. Specifically, we shall proceed in the manner which is conventional to all modern investigations concerning the testing of hypothesized relationships between variables. We shall think in terms of a series of null hypotheses, all of which could be made explicit in such a form as "there is no relationship between [the specified aspect of the infant examination] and [the specified criterion for development]." We shall then proceed with our analyses in a manner calculated to refute as many as possible of the null hypotheses. It is probably unnecessary to remind the reader that a null hypothesis is a hypothesis to be *disproved,* and that it is illogical to presume to *prove* a null hypothesis or to establish its truth. Accordingly, our most meaningful results occur in those instances where we can refute a null hypothesis, because wherever we can refute it, the hypothesis that the infant examination has predictive validity is unchallenged and by implication could be true. Accordingly, wherever the null hypothesis is refuted, we may become interested in the degree of relationship between the aspect of the infant examination and the criterion of development that is revealed in our sample, and for our tried and true criteria at least, we may be interested in contemplating the predictive economy that could result from the use of an infant examination.

Failures to refute null hypotheses can be due to many causes, such as the use of criteria that have an inappropriate content, the use of criteria that have too little reliability to show a significant trend, the use of samples that are restricted or are in some other way inappropriate; and of course, it is possible that the predictor variable simply has no predictive value for any of the criteria under consideration.

There are doubtless many students of child development who would say, "The status of many features of child development is not clear; how can you arbitrarily specify what is good development and what is poor development in a child?" Because of the controversial status of some features of child development, we have eliminated them from consideration. Most of the aspects of child development which we have included in our criteria are ones with respect to which a large number of people would be in agreement, i.e., they would feel that they understood the relevance

of the criteria for some of the values of our society. Our criteria may be outlined as follows:

I. *Intellectual Development*

A. The Stanford-Binet, 1937 Revision (12). The Binet test is considered by most people to be a good measure of the child's mental development, particularly with respect to those features of the mental development that represent the acquisition of verbal skills or that depend upon employment of verbal skills for their expression.

B. The Arthur Point Performance Scale (2). A performance scale was included because it is possible that the acquisition of verbal skills is stimulated more by certain homes, whereas the acquisition of nonverbal abilities, e.g., spatial understanding and manipulating skills, is stimulated more by other kinds of homes. The Arthur was selected because it provides a comprehensive sample of important nonverbal abilities and because it has norms suitable for a relatively wide age range.

II. *Scholastic*

The possibility had been suggested that the developmental propensities measured best by the infant test may be brought out and made distinct by school experiences. It was decided, therefore, to employ two samples. One sample would comprise children who were old enough to be cooperative and responsive in a formal testing situation but not yet old enough to be in school; another sample would comprise children who were in school and had passed the throes of the first grade. Since it was decided that some of our children should be in school at the time of follow-up, a useful measure of their development would be some estimate of their scholastic achievements. We have used measures for reading, spelling, and arithmetic. The measures we employed (Gray Oral Reading Paragraphs Test, Stanford Achievement Tests Spelling List—Form D, and Stanford Achievement Test Primary Arithmetic Test—Form D) are standardized and widely accepted as appropriate evidences of achievement at the grammar school level (9). Data for scholastic achievement are, of course, not available for our younger subjects.

III. *Motor Development*

Motor development of our children was sampled by employment of two tests of strength—jumping and a hand dynamometer test. In addition, the proficiency with which children use their hands in the Arthur examination was rated. Ratings of alacrity and coordination were also made by the examining physician as he observed the child during the course of the pediatric examination. The strength tests were administered as part of the pediatric examination.

IV. *General Physical Development*

The general physical development of the children was appraised by collaborating pediatricians who were Fellows in the Yale Child Study Center. The doctors weighed the children; took their height; observed them during the course of a general pediatric examination which included an examination of the child's development, his sensory acuity, and his reflexive responses. The physical examination, although in general quite thorough, did not include an intensive study of any particular facet of the child's development. The examination was designed to reveal discernible, practically significant deviations in physical development of functions. The examination was

not organized to reveal obscure or rare defects of structure or function.[6]

V. *Personal Development*

The aspects of the child's development most difficult to evaluate are those commonly designated as social or personal. Most of the devices that are available for evaluating a child's social or personal development have been prepared in clinical situations for the intensive evaluation of a given individual. They are not of such a nature as to permit the gathering of standard information for a large number of children. Because of this, the usual devices for studying children were not available to us, e.g., the Thematic Apperception Test or the Rorschach Test. It is only fair to point out that such well-known procedures are not only relatively idiosyncratic in their orientation but they themselves have not been validated and might indeed be more difficult to validate than the infant examination procedure per se. It seemed to us, therefore, that if it were necessary for us to use unvalidated criteria in order to examine certain aspects of the infant examination procedure, criteria should be adopted that have a certain amount of surface validity and that might possibly be subjected to independent validating studies. Evidence concerning the child's personal-social development is of three kinds:

A. An effort was made to sample the child's reaction to himself. In order to do this, we secured the children's responses to a series of hypothetical situations, for the most part situations familiar to them. We called this the Social Reaction Interview.

The information that we have gathered comprises many bits. It obviously would be undesirable to use each of these bits as one of our criteria. It seemed in the best interests of economy and clarity to combine or integrate these bits of information so that a conveniently limited number of variables of general meaning would be available.

The procedure for combining bits of information was very simple. All of the principal answers to each of the 111 questions in the Social Reaction Interview were correlated with the principal answer to every other question. Groups of questions which gave statistically consistent answers were formed. These groups were then refined by excluding any items that appeared to be psychologically inconsistent with the group. In this way groups or clusters of bits of information were formed that were both statistically and psychologically consistent. Any child could be given a score for a cluster simply by counting the number of answers he gave which fell in a particular cluster.

After such clusters were established, it was possible, for each of our children, to score the Social Reaction questions on the basis of each of these cluster scores. Such scores express the degree to which the kind of behavior implied by a cluster is characteristic of a child. Perhaps it is best to describe these scores as extensive scores rather than intensive scores. They do not imply how intense or severe any one response of a child might be, but instead indicate how general or pervasive a given kind of response might be for each child.

The manner in which this interview was used and scored is described in detail in *Interviews as a Source of Scores for Children and Their Homes* (See Part I of "A study of adoptive children"). Appendix A of that report includes a copy of the interview form which was

[6] The form on which the results of this examination were recorded is included in the Appendix to this monograph.

used. The different scores which emerged from this interview are listed below:

	Name of Cluster	Split-half Reliability
Younger sample		
	Dependence on Adults	.88
	Aggression	.58
	Socialized Compliance	.70
	Takes Adult Role	.69
	Weakness-Avoidance	.57
	Constructive Approach	.58
Older sample		
	"Goody-Goody"	.59
	Responsible Attitude	.52
	Cooperation with Authority	.41

It will be noted that the procedure yielded more scorable clusters for the younger sample than for the older sample. We consider this to be reasonable because the increased self-awareness of older children introduces complexities which greatly obscure the value of such a direct, explicit question-and-answer procedure.

B. While the children were being examined, the mothers participated in a semistructured interview with one of the psychologists. The major portion of this interview had to do with child-rearing practices. The content of this interview was recorded in standard form and organized with respect to specific bits of information. Many of these bits of information were descriptive of the child as seen by the mother and provided the basis for a cluster-scoring procedure. This interview and the cluster-scoring procedure are described in *Interviews as a Source of Scores for Children and Their Homes* (See "A study of adoptive children: I"), and the standard forms we used for recording the interview are included in Appendix B of that report. The following list includes the cluster scores that were descriptive of the children:

	Name of Cluster	Split-half Reliability
Younger sample		
	Compulsive	.52
	Aggressive	.70
	Phobic	.57
	Dependent	.71
Older sample		
	Controlled	.78
	Spoiled Child	.78
	Dependent	.60
	Anxious-Aggressive	.80

It should be noted that the nature of the cluster scores appears to shift with the age of the children. This we consider to be consistent with generally observable changes in children of different ages and this is described in the report mentioned earlier in this paragraph.

C. During the course of the psychological and pediatric examinations the child was carefully observed and ratings of his behavior were made during that time. These ratings obviously are based on a restricted sample of behavior. Nevertheless, how a child behaves in response to a challenging situation is considered by many people to be relevant to his social and personal development. (Samples of the rating forms are included in Appendix A of the present report.)

It is obvious to the reader that we do not have any measure of the whole child and indeed we have not sought such measures; research for the most part is concerned with abstractions or generalizations and, in this particular sense, is different from clinical responsibility which must ever be concerned with the individual child as a total pattern of responses.

It will be seen that our criteria are diversified rather than intensive. We have not sought to examine the child exhaustively with respect to any particular aspect of behavior; we have sought instead to sample many of the different aspects of behavior which conceivably

are relevant to the implications of an infant test, which are feasible in terms of the provisions of our study, and which are of some possible interest to those who are interested in the development of children.

In general, our criteria of development have been built to parallel the component parts of the infant examination procedure. It is suggested that the *adaptive* portion of the infant examination procedure might be most relevant to the measures of general intelligence provided by the Binet and the Arthur. The *fine motor* component of the infant-examination procedure might be relevant to the child's score on the Arthur, which is manual in implication, and with the psychologist's rating of the child's performance in manual respects. The *gross motor* portion of the infant examination procedure may seem to have a relevance for the gross motor ratings made by the pediatrician and the strength tests we have incorporated in the pediatric examination; in addition, this portion of the infant-examination procedure would conceivably be relevant to the structural development of the child as observed by the examining pediatrician. The *linguistic* aspects of the infant examination procedure would be relevant to the child's standing on the Stanford-Binet, which is a verbal measure of intelligence, the ratings of speech made during the examination, and by the (older) children's standings on reading tests and spelling tests. The *personal-social* aspect of the infant-examination procedure presumably would be relevant to a child's responses to the *Social Reaction Interview,* the manner in which he is described by his mother in the *Child-Rearing Practices Interview,* and the ratings of the child's responses in the testing situations made by the pediatrician and by the psychologists.

Perhaps these criteria would also be relevant to the informal characterizations of the child's personality which were made by the examiners and included in the informal description of the child.

Special neural or sensory evaluations based on the infant examination could be relevant to a child's over-all sensory competence as roughly estimated by the examining pediatrician, his neurological status as determined by the standard neurological examination, and by other details of the pediatrician's examination of a child's general development.

Thus it may be seen that we have sought in our small fraction of all conceivable criteria to sample kinds of behavior which would be relevant to the most conspicuous parts of the infant-examination procedure. In addition, the recommendations for the child with respect to adoptability are considered a part of the examination procedure. This, of course, can be validated in a sense by correlating it with the adoptive parent's reaction to the child.

It should be clear that a useful infant examination need not predict all these possible criteria. Any relationships found between the infant examination and the criteria could be an important reassurance to those who use an infant examination procedure. Nevertheless, if none of the aspects of the infant-examination procedure is found to have a useful degree of relationship with any of the criteria we have adopted, it would be very difficult to justify claims for the validity of the infant examination until criteria were devised which could be reliably predicted by some aspects of the infant examination. Specifically, if the infant examination does not predict any of the criteria we have adopted, then what of value does it predict? The cri-

teria that we have sought to employ, though partly of our own devising, are not esoteric criteria; they include the kinds of behavior which both child psychologists and parents understand and consider to be important.

Table 2 provides a summary of the most promising of the various criteria which we employed in our exploration of the predictive validity of the various facets of the infant examination. Parts III, IV, and Section C of Part V of our outline of criteria will be seen to have a specific representation in Table 2. This representation requires comment. The physical examination in particular, and, to a lesser degree, the procedure for the psychological examination, provide opportunities for numerous ratings and evaluations in addition to specific measurements employed. Some of the informal features of these procedures are doubtless inconsistently defined and possibly unreliably observed. In order to

TABLE 2

CRITERIA OF DEVELOPMENT SELECTED AS MOST PROMISING ON THE BASIS OF PRELIMINARY EXPLORATION

I. Intellectual Development (younger and older samples both)
  A. The Stanford-Binet
  B. The Arthur Point Performance Scale

II. Scholastic (older sample only)
  Reading
  Spelling
  Arithmetic

III. Motor Development (younger sample only)
  Physical Examination Items
    Dynamometer, L.H.
    Dynamometer, R.H.

IV. General Physical Development (younger sample only)
  Physical Examination Items
    Height quotient
    Weight quotient

V. Personal-Social Development (younger and older samples both)
  A. Child's Reaction to Himself (Social Reaction Interview)

Younger Sample:	Older Sample:
Dependence on Adults	"Goody-Goody"
Aggression	Responsible Attitude
Socialized Compliance	Cooperation with Authority
Takes Adult Role	
Weakness-Avoidance	
Constructive Approach	

  B. Mother's Reaction to the Child (Child-Rearing Practices Interview)

Younger Sample:	Older Sample:
Compulsive	Controlled
Aggressive	Spoiled child
Phobic	Dependent
Dependent	Anxious-aggressive

  C. Ratings Made by Examiners
    Test Reaction Scale Items (younger and older samples both)
      Sensitivity to failure
      Reaction to failure
      Belligerence
    Physical Examination Items (younger sample only)
      Approach to examiner
      Reaction to undressing
      Activity
      Composite pediatrician's rating

eliminate the less meaningful data which these procedures provide and in order to select out the more promising data, all the various items, ratings, and bits of information were correlated with all of the facets of the infant examination and were correlated with our various measures of the environment. The elements of our data which produced no relationship of important degree or fewer evidences of relationship than could be expected on the basis of chance alone were discarded, and the remaining more promising elements are included in Table 2.

As we have noted in other paragraphs, our criteria for development vary greatly not only in content and source but in certain important technical respects. The criteria for mental ability, the Binet and the Arthur, are well known, well standardized, reliable, and valid in the sense that their relationships with other variables are known. Similar advantages may be claimed for the scholastic achievement tests. Some of the aspects of the physical examination, particularly the measures of size and strength, are well known and require little description or justification. Our measures for the social and personal aspects of children's development do not have all these advantages. Most of the cluster scores and the various ratings for personal and social development are novel and untried. Although we believe that little defense or justification for their purpose and content is required, it must be explicitly acknowledged that as measuring devices they are untried. We may suspect that as a group they are less reliable than our measures for mental ability. It is probable that some of these criteria are inappropriate for a study of the *degree* of relationship. Accordingly, we must not expect evidence of exact degree of relationship from these criteria. Much may be said in defense of these criteria, however. They meet certain practical requirements. As will be noted in our analyses, they are capable of yielding interesting and reliable correlations and accordingly, they obviously cannot be devoid of reliability. (In addition, we have shown promise of reliability for the cluster scores by the the use of the split-half method.) We believe, therefore, that if the infant examination has useful predictive validity for the behavioral content represented by these cluster scores, the cluster scores will be sufficient to show evidence of such validity. We find no reason for fearing that intrinsic validity for the content of these clusters will be obscured because of the imperfect nature of our measures.

Relationships Between Aspects of the Infant Examination and Criteria of Development

We sought evidence of relationship between all the various aspects of the infant examination and all of the criteria which were described in the preceding section. Our analyses involved certain intricacies and observed certain precautions that can be better illustrated than explained abstractly. Accordingly, we shall begin by a description of our study of the relationships between the General Maturity Quotient of the infant examination and Binet IQ at the time of our follow-up study. We begin with a discussion involving the General Maturity Quotient because this was the most promising aspect of the infant examination; almost all of the others showed no hint of validity.

It will be remembered that we expected to base our main analyses on the data for the younger group and to use the data for our older group to confirm or qualify the results of analyses for the

younger group. It should be remembered also from our discussion of the infant-examination procedure and from our discussion of our samples that all of our children do not lend themselves equally well to a validity study such as ours. Specifically, some of the children were placed adoptively *before* an infant examination. It seems highly improbable for those children that any relationship between the infant examination and subsequent criteria for development could be confounded with environmental differences resulting from selective placement based on the infant examination. We know that there were other children, however, who were placed adoptively *after* the infant examination, and that for these children there was some chance that the infant examination could have been a factor in the selective adoptive placement of the children. As a matter of fact, during the period when our children were placed adoptively, it was common practice in many southern New England agencies to depend upon the infant examination as an important aid in making decisions concerning the selective placement of adoptive children. Accordingly, we could suspect that the relationships between the infant examination and the criteria could be confounded by differences in environment emerging or organized on the basis of differences in infant test scores. More may be said in this connection.

It will be remembered that the examiners were not equally confident of the examinations for all of the children, that the examiners refused to classify some children on the basis of the first infant examination and suggested that the child be returned at some later time for another examination which might permit a more confident classification of the infant. It would seem possible, therefore, that the infant examinations in which the examiner had the greatest confidence and which led to the prompt classification of the infants would be more likely to influence the selective placement of the infants than examinations which in some respects were qualified and which the examiner did not wholly trust. In this connection it should also be recalled that those who advised us indicated that, in general, the examiners had more confidence in this examination when given between the twelfth and fortieth weeks than when given at other ages. It is possible, therefore, that examinations given to infants during this optimal age period may have been more important in influencing the selective placement of infants than examinations given at other ages. Accordingly, our analyses will distinguish between those infants who received their first examination at an optimal age and were confidently classified and those infants who either did not receive their first infant examination at an optimal age or who were not confidently classified as a result of the first infant examination.

Table 3 illustrates the distinctions that we have made among our children. This table summarizes the results of our validity analysis where the predictor variable is the General Maturity Quotient on the infant examination and the criterion is Binet IQ at the time of follow-up. (Incidentally, Table 3 summarizes our analysis between the General Maturity Quotient and the IQ on the Arthur Point Performance Scale at the time of our follow-up, too.) It may be noted that Table 3 describes our results for both the younger and the older groups.

Let us first consider the results for the younger group. Here the younger group is divided into an "after" group,

TABLE 3

RELATIONSHIPS BETWEEN THE GENERAL MATURITY QUOTIENT ON THE INFANT EXAMINATION AND MEASURES OF MENTAL ABILITY AT THE TIME OF THE FOLLOW-UP STUDY

Sample	With Binet IQ		With Arthur IQ	
	r	*N*	*r*	*N*
I. THE YOUNGER ADOPTIVE SAMPLE:				
A. Infants placed in adoptive homes *before* the infant examination:				
1. The first infant examination led to an unqualified classification and was administered between the ages of 12 and 40 weeks	−.14	32	−.16	32
2. The first infant examination did not result in a confident classification and/or the examinations were administered after 40 weeks*	.15	21**	.13	21**
B. Infants placed in adoptive homes *after* the infant examination:				
1. The first infant examination led to an unqualified classification and was administered between the ages of 12 and 40 weeks	.55	30	.19	30
2. The first infant examination did not result in a confident classification and/or the examinations were administered after 40 weeks	.16	30	.03	30
II. THE OLDER ADOPTIVE SAMPLE:				
A. Infants placed in adoptive homes *before* the infant examination:				
1. The first infant examination led to an unqualified classification and was administered between the ages of 12 and 40 weeks	.20	16	−.06	16
2. The first infant examination did not result in a confident classification and/or the examinations were administered after 40 weeks	.42	7**	.62	7**
B. Infants placed in adoptive homes *after* the infant examination:				
1. The first infant examination led to an unqualified classification and was administered between the ages of 12 and 40 weeks	.15	37	.28	35**
2. The first infant examination did not result in a confident classification and/or the examinations were administered after 40 weeks	−.02	18	−.22	18
III. THE NURSERY SCHOOL SAMPLE	−.14	35		

Note.—The average correlation between the General Maturity Quotient and the Binet IQ for all the various adoptive subsamples except the one which provides evidence for selective placement (the 30 younger adopted children in the selected after group) is .09. If this average includes the nursery school group also, it becomes .05. If an average correlation is computed which includes all the various subsamples except the younger one where selective placement was indicated, the nursery school group, and the selected younger sample when environmental differences have been partialed out of the correlation one finds the average correlation between the General Maturity Quotient and the Binet IQ to be .08.

* Two of these were examined before 12 weeks; one at 9 weeks, the other at 11 weeks of age.

** We did not have complete data for all cases; therefore, some of these correlations are based on *N*'s slightly smaller than the total *N*'s in the subsamples (see Table 1).

the group where the infants were placed adoptively after their infant examinations. A "before" group was also indicated, this was a group where the infant was placed adoptively before the infant examination. In the "after" group one could suspect selective adoptive placement occurring in part as a result of the infant's standing on the infant examination. In the "before" group one could have no basis for suspecting that the infant examination could have been a fac-

tor in selective adoptive placement. It will be noted that both the "after" and the "before" groups are divided into two parts. One part which we have selected for special emphasis comprises those whose first infant examination was administered at an optimal age and led to a confident classification of the infant. The other part comprises those whose first infant examination either was not given at an optimal age or was in some manner qualified and did not lead to a confident classification.

We would anticipate that *selective* adoptive placement based on the infant examination would be particularly probable for the selected "after" group of children who received their infant examination at an optimal age and whose infant examination led to a confident classification. It is obvious that we must be careful in our use of these "after" groups in our validity analyses. It is possible that such groups could yield seriously misleading evidence incorrectly suggesting a relationship between the infant examination and some criterion, e.g., the Binet. Such a confounding of the relationship could emerge because of selective arrangement of the relevant environment occurring as a result of selective adoptive placement based on the infant examination.

In view of our concern about the possible effects of selective placement, the data provided by Table 3 are most interesting. The only reliable relationship between the General Maturity Quotient and the Binet IQ occurred for the selected "after" group where selective placement based on the infant examination was considered the most probable. Specifically, the only correlation for the younger children which might possibly be used to refute the hypothesis of no relationship between the General Maturity Quotient and Binet IQ is for the very subgroup where selective adoptive placement (and the confounding with the environment) seems most probable. It is interesting to look at the data provided by the older sample. None of its subgroups provides any evidence for the refutation of the hypothesis of no relationship. To be sure, one of the very small older subgroups produces a high correlation. This correlation is not reliably greater than zero, however, and scrutiny of our data shows that it is almost wholly the result of two cases.

If for the younger sample one were to exclude from consideration the subgroup where selective placement seemed most probable, the selected "after" group, the average correlation for the three remaining subgroups would be only .05. If one were to take the average correlation among the four subgroups comprising the older sample, a value of .14 would emerge. Thus it would appear that if one were to discard the subsample where selective placement would seem most probable, we would have no basis for refuting the null hypothesis.

Since the probability of selective placement is so great for the selected "after" group, we do not consider it to be appropriate for our analyses and it should be excluded from consideration. Because we suggest that this subsample be excluded from consideration and because of our interest in adoptive placement practices as they may have involved the infant examination, it is of interest to examine the plausibility of these selective placement hypotheses.

In order to show that selective placement could have occurred in the particular subgroup where we had suspected it, we conducted two parallel studies of

possible relations between aspects of the infant examination and aspects of the child's environment. These parallel studies required two groups. One group comprised the 30 children who were tested at an optimal age, confidently classified on the basis of the first examination, and placed in adoptive homes *after* the first examination. The other group was also tested at an optimal age and confidently classified; they, however, (32 in number) were placed in adoptive homes *before* the first infant examination. Since the selected "after" group was for the most part agency placements and the selected "before" group was mostly independent placements, these two groups could have been somewhat different from each other with respect to infant-examination scores and measures for the environment. With respect to the infant examination, however, the differences between our selected "before" and selected "after" groups were not great. For example, in the selected "before" group (comprising 32 children) the mean and the standard deviation of the General Maturity Quotient on the first infant examination were 102.3 and 12.3, respectively. For the selected "after" group (comprising 30 children) the mean and the standard deviation on the first infant examination were 97.0 and 11.7, respectively. The difference between the means appears to be due to one extreme case. The difference between the standard deviations is not significant and accordingly we need not be concerned about differences in range of infant examination scores when we conduct parallel analyses for the selected "before" and selected "after" groups.

It is our particular interest to see whether or not there are some environmental differences which are predictable from the infant examination for the selected "after" group but not predictable from the infant examination for the selected "before" group. If the infant examination is used as a basis for selectively placing adoptive children in adoptive homes, we would expect correlations between some aspects of the infant examination and some aspects of the adoptive homes for groups of adoptive children who were placed by agencies *after* the infant examination. We would not expect such correlations to appear for groups of children who were placed adoptively *before* they received an infant examination.

Let us review some of the more interesting indications from this parallel analysis. Beginning with the *Ambition* cluster score for the home (see our report *Interviews as a Source of Scores for Children and Their Homes* for a discussion of environment scores), we find no evidence of important relationships for the "before" group. (The correlation between the General Maturity Quotient and the *Ambition* cluster score is -.17.) For the "after" group, however, we find indications of relationship between the General Maturity Quotient and the *Ambition* cluster score. (The respective correlation is .38.) Thus the "after" group not only provides a positive correlation but the correlation coefficients for the two groups are significantly different from each other.

There is no hint of important relationship between the *Harmonious* home cluster and the infant examination.

For the *No Ambition* cluster, however, there are indications of relationships. It is found that for the "after" group there is an inverse relationship between aspects of the infant examination and this cluster score; this suggests selective place-

ment. Curiously enough, there is a positive relationship between the *No Ambition* cluster score and the respective parts of the infant examination for the "before" group.

Continuing with our discussion of the cluster scores, we find no indication of relationship between status on the infant examination and the *Rejection* cluster score for the home. Similar apparent lack of relationship characterizes our survey for the *Parental Incompatibility* cluster score and the *Overprotective* cluster score. The balance of our analyses for the various cluster scores suggests that selective placement did occur for those children who were placed after their infant examination. One interesting instance is the postitive relationship between good standing on the infant examination and a tendency for adoptive parents to punish aggressive expression in the children ("after" group).

For these two groups of children we find certain additional evidence for selective placement. For the selected "after" group there is indication that status on the infant examination is related with the education-occupation status[7] of the adoptive father ($r = .47$). There is no such indication for the selected "before" group ($r = -.12$). These correlations are reliably different.

With respect to the difference between the selected "before" group and the selected "after" group in apparent degree of correlation between the General Maturity Quotient on the infant examination and the Binet IQ at time of follow-up, certain additional comments may be offered. One might expect that the difference between these two correlations is somehow or other an artifact of some insignificant differences between the two groups with respect to age at infant examination. In order to examine this possibility minutely, it was possible to arrange a selected "before" group and a selected "after" group so that they were exactly matched with respect to age at time of infant examination. For these respective matched groups of 22 cases, the correlation between General Maturity Quotient and Binet IQ was again determined and the two correlations were found to be reliably different.

In order to pursue the hypothesis that the correlation of .55 for the *selected "after" group* was an artifact of selective placement based on the infant examination, it was decided that we should attempt to consider the effect of probable aspects of the agencies' selective placement practices on this correlation. In the preceding paragraphs we indicated that we have provided evidence of selective placement with respect to the Ambition–No Ambition[8] aspects of the adoptive home, and with respect to the education-occupation status of the home. Our

[7] The composite education-occupation scale forms a continuum representing a combination of educational and occupational achievement of the home, and was based on the following operation: If the adoptive father's occupation was business or professional or in the white-collar group, a score of plus one was arbitrarily assigned. If, however, the adoptive father's occupation was unskilled, semiskilled, or skilled, the weighting was minus one. Weighting of zero was given in all situations where we did not know the occupation of the adoptive father. The father's education was combined by allowing plus one if he had attended college, minus one if he had not attended college, and zero when we did not have this information. The mother's education was scored in a similar manner. These three sets of weights were combined algebraically to form a general composite score representing the education-occupation status of the home.

[8] This Ambition-No Ambition composite cluster score was formed by giving the score on the *Ambition* cluster a plus sign and the score on the *No Ambition* cluster a minus sign, and then taking the algebraic sum of the two scores.

conversations with the various agency representatives as well as the published reports of other investigators (4) indicate that the age of the adoptive parents and the duration of their marriage was also taken into consideration. Accordingly, we formed an Age–Duration of Marriage composite[9] score.

If our selected "after" group had been very large indeed, it might have been possible for us to find subgroups which differed from each other with respect to the environmental factors resulting from selective placement, but which were homogeneous within themselves with respect to these environmental factors. An average correlation between the General Maturity Quotient and the Binet IQ for such subgroups of homogeneous environments would be a correlation free from the influence of differences in the environment resulting from selective placement. Our group is obviously too small to make possible such an analysis, but from the statistical standpoint the partial correlation coefficient is considered to be the equivalent of such an hypothetical average correlation.

Accordingly, a partial correlation between the General Maturity Quotient and the Binet IQ was computed for the selected "after" group. The partial correlation represents the correlation between the General Maturity Quotient and the Binet IQ after the influence of differences in the Ambition–No Ambition cluster score, the Age–Duration of Marriage score, and the Education-Occupation score have been eliminated from the original correlation. Under these circumstances the original correlation of .55 is reduced to .28. We consider this reduced correlation to be the best estimate of an average of correlations which might be found for hypothetical subgroups which differed from each other with respect to these environmental factors (seemingly organized on the basis of selective placement) but which within themselves were homogeneous in these environmental respects; we specifically regard this correlation as an estimate of an hypothetical correlation which is free from the aspects of confounding previously discussed.

Readers who prefer an hereditary explanation for individual differences may object to this partial correlation on the grounds that they consider both the differences in the infant examination and the differences in Binet IQ to be organized at least partly on the basis of common heredity and that any organization of the environment which occurred as a result of differences in the infant examination (or as a result of hereditary differences in the true parents) was in part at least an expression of the kind of hereditary factors which were responsible for the relationship between the General Maturity Quotient and the Binet IQ. Such readers could claim on the basis of their beliefs that our partial correlation analysis partialed out too much, i.e., it partialed out differences which were an expression of the relevant underlying heredity. In order to answer this question, we can offer two consider-

[9] The age-duration composite was prepared in the following manner: If the adoptive father were in his thirties, a score of plus one was arbitrarily given; if he were under thirty or forty or over, a score of minus one was given; if his age were unknown, a score of zero was given. The same scoring system was used for the age of the adoptive mother. In addition, if the couple had been married for seven or more years, a score of plus one was given; if they had been married for less than seven years, a score of minus one was given; and if the duration of their marriage was unknown to us, a score of zero was given. These three weights were added algebraically to give us a composite measure of the age of the adoptive parents and the duration of their marriage.

ations. First, the correlation between the infant examination and the education-occupation status of the true parents is only .16. This provides no basis for believing that the infant examination is an expression of any prepotent hereditary factors of the true parents which are sufficient to result in differences in their educational-occupational attainments.

Our more effective answer to this question involves the use of a control group. We were able to include in our follow-up study 35 children living with their true parents. These children had been examined in infancy as a part of preparations for their enrollment in the Clinic nursery school. Unfortunately, the correlation for this group was −.14. If an arrangement where a congruence between characteristics of the true parents and characteristics of the child's home environment could produce a correlation between the infant examination and criteria of development, we should most expect such a correlation to emerge for this group. This discouraging correlation of −.14 obviously fails to provide any indication that our partial correlation procedure disregards an important hereditary component in the correlation of .55 for our selected "after" group (where selective placement based on knowledge of either the true parents or the infant examination could have occurred). Incidentally, this sample of 35 children provides an additional instance where an hypothesis of no predictive value could have been refuted (if refutable by the use of our criteria). Unfortunately, this sample provides no challenge to the null hypothesis (the hypothesis of no relationship).

It should be remembered that we sought evidence of relationship between each of the various facets, scores, and indices of the infant examination and each of our various criteria for development. The Classification on the infant examination, which includes both the quantitative aspects of the infant examination and certain qualitative aspects, was found to reveal a pattern of relationships with the Binet IQ which was very similar to the pattern revealed by the General Maturity Quotient. The selected "after" group showed a correlation between Classification and the Binet IQ of .60. The emergence of this particular correlation is quite suggestive of selective placement based on the infant examination. Incidentally, the correlation for the selected "before" group was −.06. Certain preliminary analyses showed that the examiner's descriptions at the time of the infant examination ("drive and interest") was reliably related with Classification but not with General Maturity Quotient.[10] We had found that the children who were characterized by "sustained drive and interest" tended to be placed in those homes which eventually showed relatively high scores on punishing for aggression. When differences in the Punishment for Aggression cluster score, as well as differences in Ambition–No Ambition, Age–Duration of Marriage, and Education-Occupation were partialed out of the correlation between Classification on the first infant examination and Binet IQ at time of follow-up, the correlation was reduced to .30. In this connection the reader may wonder whether infants who were characterized by sustained drive and interest developed into children who required punishment for aggression. In order to answer this question, we examined the relationship between "sus-

[10] This is consistent with the composite basis for the Classification as contrasted with the psychometric basis for the General Maturity Quotient.

tained drive and interest" and "punishment for aggression" for our selected "after" group and our selected "before" group. For our selected "after" group the relationship was significant, whereas for the selected "before" group the relationship was not significant. This is taken as a further indication that drive and interest were factors in the selective placement of the infants and not necessarily a factor which predetermined the kind of child-rearing practices that would emerge as a consequence of a child's "intrinsic" personality.

The reader may be dissatisfied with our partial correlation analysis and we do not regard the results for the selected "after" group as first-rate evidence. This most obviously is a group where selective placement based on the infant examination is most probable and perhaps the evidence provided by this group should be excluded from consideration. It is of interest, however, to show that the indication of relationship between the infant examination and the Binet criterion of mental ability occurs for this group only and may be plausibly explained in terms of a selective placement hypothesis. Stated differently, by a consideration of the selective placement hypothesis, the indication for this most dubious subsample may be brought in line with the indications for all of the other subsamples.

As we terminate our discussion of the criteria for mental development, one may wonder why the selected "after" group with the strong evidence of selective placement based on the infant examination did not provide evidence of a correlation between the General Maturity Quotient and the Arthur IQ. The explanation for this may lie in the fact that the various environmental factors which the agencies seemingly considered in their selective placement practices are not shown by our analyses to be as consistently or as reliably related with the Arthur IQ as they are with the Binet IQ. From this one would infer that the differences in ability which the Binet represents and the differences in ability which the Arthur represents do not emerge in the same manner as a consequence of environmental differences. Our numerous analyses involving all facets of the infant examination and the criteria for mental development provide no basis for refuting the hypothesis that there is no relationship between the infant examination and the criteria for mental development. In view of all the relationships examined, fewer promising trends emerged than could be accounted for on the basis of chance alone, and these promising trends were found only for a subsample where selective placement based on the infant examination was not only anticipated on a priori grounds but was indicated on the basis of analyses. In addition, partial correlation analyses sustained and illuminated the selective placement hypothesis for the emergence of these few correlations. Despite the fact that we used numerous subgroups, two different age samples, and a sample of children living in their own homes, we could find no challenge to the hypothesis of no relationship, and the implications of our study are congruent with the implications of others who have examined this question (1, 3, 5).

Our data for the older sample included scholastic achievement criteria. There was no indication that any of these criteria was reliably related with any aspect of the infant examination.

When we consider certain "nonpsychological" aspects of the infant's development, we find some indication that the

infant examination may have some predictive value. Specifically, it is found that the adaptive developmental quotient on the infant examination has a correlation of .45 with strength of grip in the left hand as measured by the dynamometer at the time of our follow-up examination. This correlation of .45 is found for the selected "before" group, a group in which we have no basis for expecting selective placement or confounding from any other source. Although this correlation is plausible in the sense that the adaptive developmental quotient involved the use of the hands, the correlation was not reliable for the other subgroups and could be an accident of sampling. Since the physical examination was not conducted with the older sample, we could not explore this relationship further.

The weight quotient (a weight/age ratio) showed an interesting correlation with the fine motor developmental quotient of the infant examination. The correlation for the selected "before" group was .44 and for the selected "after" group it was .20. The other correlations were less promising.

It is interesting to note that the most definite suggestions of predictive validity of the infant examination are the physical aspects of development. It may be remembered from our discussion of the infant examination that this was an aspect of development which received relatively little emphasis in the literature concerning the infant examination (an examination for infant behavior). We should not overgeneralize, however, and conclude that our data show definite evidence that the infant examination has predictive value for these and other physical aspects of development. Our data are suggestive and should be followed by further inquiry where the physical aspects of development are the focus of the investigation.

The various possible relationships between aspects of the infant examination and our various measures for the personal and social development of the children were examined for our different subgroups. The many correlations were small and insignificant. From the numerous possibilities only two correlations of any interest emerged and both of these were for the selected "after" group which will be remembered as being characterized by selective adoptive placement based on the infant examination. For the selected "after" group the psychologist's rating of Sensitivity to Failure (made at the time of our follow-up study) was correlated to the order of .37 with the Personal-Social developmental quotient of the infant examination. The corresponding correlation for the selected "before" group was .19. In view of our a priori considerations and the results of our analyses with the Binet IQ, we are not surprised to find that this correlation of .37 for the selected "after" group was reduced to the order of .24 when differences in Ambition–No Ambition and Age–Duration of Marriage were eliminated from this correlation by the partial correlation device.

A similar pattern of relationships was observed for a special composite score which we prepared, a score comprising the child's approach to the pediatric examiner, his reaction to undressing, interest, affect, and activity at the time of the physical examination during the follow-up study. This composite score was correlated with the Personal-Social developmental quotient on the infant examination to the order of .31 for the selected "after" group. The correlation for the selected "before" group was −.10. When differences in the Ambition–No

Ambition composite score were eliminated from the correlation of .31 by the partial correlation device, the correlation was reduced to .27. It is probable that this correlation could have been further reduced by the use of other variables.

It should be noted that no promising correlations emerged in the selected "after" subsample for our *older* children. We examined the data for the older children and learned that the correlations between aspects of the infant examination and aspects of the environment were not as high as the respective correlations of the younger sample. Although the difference between the correlations for the two age groups would not have reached the criterion for statistical significance, the difference in magnitude may be sufficient to account for the fact that the correlations between the infant examination and the criteria did not emerge. Some of our subsequent analyses suggest an explanation. In general, the standards for selecting the adoptive homes were higher prior to 1945 when the older sample was being placed than subsequent to 1945 when the younger sample was being placed. The difference, particularly with respect to such variables as ambition (which, incidentally, was not a factor in the selective placement of the older children) were not differences in range but differences in level. It seems possible, therefore, that some of the conspicuously less favored homes which might have had a detracting effect on the child's development were not represented in our older sample to an appreciable degree. This is not a necessary interpretation, however. It is possible that the *school child* is not dependent in his development on the home in the same manner as the *preschool child*. In this connection, however, it may be remarked that both the younger and the older sample provide evidence of relationship between aspects of the environment and aspects of development. More will be said of this in our report on the environmental relationships.

Conclusion

In conclusion, our exploration of the relationships between the numerous facets of the infant examination and the numerous criteria for development which we have employed has yielded a lengthy and monotonous series of correlations which were not only unreliable but which were too small to be of any practical interest had they been based on huge samples capable of making practically insignificant correlation coefficients statistically significant. The correlations between aspects of the infant examination and our criteria which were statistically significant and large enough to suggest some practical value were so infrequent as possibly to have occurred as a result of chance alone. Moreover, these more interesting correlations occurred in a subsample where selective placement on the basis of the infant examination was not only anticipated but was consistent with correlations between the infant examination and certain conspicuous characteristics of the adoptive parents which could have been known to the placement agencies. Partial correlation analyses sustained the selective placement hypothesis for this questionable group.

Aside from the few correlations produced by the subsample where selective placement based on the infant examination was conspicuous, the other interesting correlations were for strength of grip and weight quotient. These correlations were not found for all subsamples, and since the physical examination was not conducted for our older group, they could not be confirmed. They are far

from conclusive and only suggestive, but their implications should be explored by analyses which emphasize physical aspects of development.

Our investigations have sought evidence of predictive validity both with respect to facets of the infant examination which other investigators have not examined and with respect to criteria which other investigators have not employed. (Some of our criteria, such as ratings and cluster scores, are not as well tried or as reliable as our mental ability, scholastic achievement, or physical development criteria. Nevertheless, our cluster scores, and by inferences from numerous significant correlations, our ratings, too, offer a modicum of reliability and should be sufficient to indicate the presence of predictive validity despite the possibility that they would not yield suitably exact indications of *degree* of validity.) Despite the broad basis of our study, we, like the others, have no basis for challenging the hypothesis that the infant examination is without predictive validity. As we have frequently emphasized, however, such a result does not *prove* that the infant examination has no predictive validity, and one must remember that it is never possible to prove a hypothesis of no relationship.

Appendix A

TEST REACTION SCALE

Mother-Child Relationship as Observed by Examiner

1. Child was not at all hesitant about leaving mother, scarcely said goodbye and went with examiner readily. He showed no concern for mother during examination and was extremely casual about seeing his mother again at close of examination.
2. Child was somewhat hesitant at leaving mother, said goodbye and looked to see where she would wait, and showed pleasure at seeing her again at close of examination.
3. Child was extremely reluctant to leave mother, held on to her hand, may have cried, wanted her to come with him, needed to be reassured that she would wait for him. He asked about her several times during the examination. He seemed very much relieved to see her again.

Attention

1. Completely absorbed by task with no interference from distracting stimuli.
2. Almost always absorbed by task but a little interference from distracting stimuli.
3. Pays attention to task. Efficiency is not impaired by attention to outside stimuli.
4. Child is easily distracted by extraneous stimuli or by his own ideas, but returns readily to the task.
5. It is difficult to get and maintain the attention of the child.

Activity

1. Child can't sit still for any length of time. Often stands up, explores the room, shifts position, climbs around the chair.
2. Child generally sits still for the interview but may occasionally become restless, shift position, slide down in the chair.
3. Child sits still during most of the interview unless told to stretch or stand.

Sociability

1. Child adjusted to the examination with immediate friendliness. He smiles, laughs, shares experiences with the examiner shortly after meeting.
2. It requires a while for him "to warm up" to the examiner.
3. The child maintains an attitude of reserve for a considerable length of time. It is only toward the close of the examination that any friendliness is manifested.
4. The child at no time becomes friendly, laughs, smiles or talks spontaneously or freely with the examiner.

Belligerence

1. Child is markedly belligerent. He attempts to strike or insult the examiner or to mar equipment.
2. Child is surly and may deliberately refuse to cooperate.
3. Child displays no evidence of hostile reactions during examination.

Maintenance

1. After the child feels at ease with the examiner, favorable cooperation and motivation are sustained for the duration of the contact.
2. After the child feels at ease with the examiner favorable cooperation and motivation are generally sustained but the child may have moments of apprehensions, distrust or belligerence.
3. After the child feels at ease with the examiner favorable cooperation and motivation deteriorate so that the child cries, refuses to continue, becomes excessively fatigued.

Reaction to Failure

1. Child reacts to a feeling of failure with marked increase in effort and persistence.
2. Child reacts to a feeling of failure with a slight increase in effort and persistence.
3. Child reacts to a feeling of failure with slight decrease in effort and persistence.
4. Child reacts to a feeling of failure with a marked decrease in effort and persistence.

Sensitivity to Failure

1. The child is oblivious to his failures and indifferent to any suggestion of error.
2. The child shows some recognition of his errors and slight concern about errors.
3. The child is markedly sensitive to failure and shows considerable concern about errors.

Male Versus Female Examiner

1. Child exhibits a greater degree of enthusiasm, friendliness and confidence with a male examiner than with a female examiner when other factors remain the same.
2. Child exhibits the same degree of enthusiasm, friendliness and confidence with a male examiner as with a female examiner when other factors remain the same.
3. Child exhibits a lesser degree of enthusiasm, friendliness and confidence with a male examiner than with a female examiner when other factors remain the same.

Modesty

1. The child removes his clothes readily.
2. The child removes his clothes only with encouragement and persuasion.
3. The child is extremely reluctant to remove his clothes.

Thumb Sucking

1. During the time the child is observed at the clinic he sucks his thumb whenever otherwise not engaged.
2. During the time the child is observed at the clinic he sucks his thumb intermittently.
3. During the time the child is at the clinic he is observed to suck his thumb.
4. During the time the child is observed at the clinic there is no thumb sucking.

Fine Motor Ability

1. The child exhibits continuous and precise controls so that fine motor activities are rapid and accurate.
2. The child exhibits some control over fine motor activities but movements are occasionally inaccurate or somewhat slow.
3. The child exhibits little control over fine motor activities so that movements are inaccurate or clumsy.

Speech Defect

1. The child has a sufficiently severe speech defect that interferes with communication.
2. The child has a mild speech defect which, however, does not interfere with communication.
3. There is no evidence of speech defect.

Appendix B

A.C.R.P. EXAMINATION FORM

Name _____ Sex _____ Birth Date _____ Date of Ex. _____

Height _____ Weight _____

Pertinent History:

Head: Circumference _____

Shape: Dolichocephalic _____
Brachycephalic _____
Other _____

Hair: Color _____ Consistency _____

Eyes: Color _____ E.O.M. _____ L.&A. _____ Fundus _____
Vision: R L
Other

Ears: External _____ T.M. _____
Hearing: R L
W.V. (15″)

Nose:

Mouth: Teeth: Number _____ Caries _____ Fillings _____
Orthodontic _____
Tongue:
Mucosa:

Throat: Tonsils: Present _____ Absent _____
Size _____

Neck: Adenopathy:
Thyroid:

Chest: Shape:
Lungs:
Heart & Circulation:
Rate _____
Rhythm _____
Murmurs _____
Size _____
Femoral Pulse _____

Abdomen: Shape:
Liver: Kidney: Spleen:
Tenderness:
Masses:

Genitalia: Circumcision: Other:
Testes Descended:

Skin:

Ext. Back Spine _____ Deformity _____

Joints _____ Limitation of Motion _____

Neurological:

Cranial Nerves _____
Motor Nerves _____
Sensory Nerves _____

Reflexes: 1. Hyper 2. Normal 3. Hypo 4. Absent

	R	L
T		
B		
BR		
Abdomen:		
Upper		
Lower		
K		
A		
P		
Crem.		

Gross Motor:

Agile
Normal
Clumsy

Handedness: R _____ L _____

Strength: Dyn. _____
Jump _____
Pull _____

Personality

Approach to Examiner

_____ 1. Spontaneous
_____ 2. With suggestion
_____ 3. With urging
_____ 4. Resistive

Speech

_____ Spontaneous
_____ Hesitant
_____ Lisping
_____ Stammer
_____ Infantile
_____ Other

Reaction to Undressing

_____ Unassisted
_____ Partly Assisted
_____ Assisted
_____ Prompt without show of concern

_____ Cooperative but not enthusiastic
_____ Great resistance

General Description:

Interest and Curiosity:
Affect:
Activity:

General Impression:

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A Study of Adoptive Children:

III. Relationships Between Some Aspects of Development and Some Aspects of Environment for Adoptive Children

By

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A Study of Adoptive Children: III. Relationships Between Some Aspects of Development and Some Aspects of Environment for Adoptive Children[1]

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Introduction

THE FOLLOWING pages present the third phase of a rather lengthy investigation of adoptive children. The first phase, *"Interviews as a source of scores for children and their homes"* (17),[2] described our efforts to provide some measuring devices which were appropriate to our interests and in keeping with limitations imposed by the nature of our total investigation. The second phase, *"The predictive validity of the Yale Developmental Examination of Infant Behavior"* (18) has been described in terms of our efforts to find a useful degree of predictive significance for the infant examination; our efforts in this direction were unsuccessful.

The present phase suggests respects in which characteristics of children's environment may be correlated with characteristics of their development. Specifically, the present report is concerned with a general question which was phrased in the following manner at the time our study was planned and support was sought from the Russell Sage Foundation:

"What characteristics of adoptive homes (placements) may be shown to be

[1] The staff of the project wishes to express its appreciation to Dr. Donald Young, Director of the Russell Sage Foundation, and to Dr. Carl Hovland and Dr. Milton Senn of Yale University. The nature and the quality of this effort have been greatly influenced by such friends and advisers as Dr. Joseph Baldwin, Dr. Nancy Bayley, Dr. Harold Jones, Dr. Neal Miller, Dr. Robert Sears, and Dr. Helen Thompson. We are indebted also to Dr. Leonard Cottrell, Dr. Liselotte Fischer, Dr. Else Frenkel-Brunswik, Dr. Marjorie Honzik, Dr. Mary Cover Jones, Dr. Frederick Mosteller, and Dr. A. J. J. Van Woerkom. We are particularly grateful to the adoptive families who participated in this investigation, the child placement agencies who cooperated with us and guided our efforts, and to Adelaide Piscitelli, David Macklin, David Jenkins, and Peter Field who helped in the analysis of the data and the preparation of the manuscript.

[2] References for the present report are listed on page 231. The pagination of the present report is continuous with the second report of this series, entitled "A study of adoptive children: II. The predictive validity of the Yale Developmental Examination of Infant Behavior" (*Psychol. Monogr.*, 1956, Vol 70, No. 1 [*Whole No. 409*]).

correlated with characteristics of adoptive children?"

It should be noted that this question requires that we consider a wide range of measures of the child's development and of the child's environment. We obviously are not committed to an "explanation" of any relationships that we find nor are we committed to a precise determination of the ultimate magnitude or degree of any of the relationships suggested by our data.

Despite the exploratory nature of our investigation, its results have implications for three related topics of current interest: the placement practices of child welfare agencies, the child-training practices of parents, and theories and beliefs concerning the development of the personality. Because of the implications of the study, we sought to conduct our central analyses with respect to two samples. One sample comprised 114 adoptive children who were in their fifth or sixth year of life but who were not yet involved in the work of the first grade. Our second sample comprised 81 adoptive children who were past the work of the first grade but were not yet preadolescent in their development; seventy per cent of these children were in their eighth or ninth year of life. It was hoped that these two samples would provide mutual confirmation for some of the readily confirmable trends and suggest qualifications for trends that most require qualification. We have been greatly concerned with the manner in which observed trends or relationships may be interpreted. Since our analyses describe relationships between fairly definable characteristics of the child's environment and fairly definable facets of his development, there is danger that one may overgeneralize and prematurely or incorrectly ascribe a literal, casual significance to our specific environmental variables.

Although the relationships to which we draw the reader's attention meet conventional criteria for statistical significance, we do not know how much practical significance to ascribe to them. Almost without exception they are plausible and consistent with possible implications of current theories of personality development. Nevertheless, the relatively crude, untried nature of some of our variables, particularly our measures for the environment, does not permit us to make confident statements concerning the degree or the importance of the relationships suggested by our data. Before we can be confident of the practical importance of these relationships, confirmatory studies should be undertaken. Such studies should draw upon samples which differ in certain respects from ours and should make use of hoped-for refinements in our measuring devices.

The purpose of our investigation requires that we examine the relationships between numerous aspects of the child's development and numerous aspects of his environment. The breadth of our interest in these two classes of variables is indicated in our descriptions of the first and second phases of our total investigation, "*Interviews as a source of scores for children and their homes*" and "*The predictive validity of the Yale developmental examination of infant behavior.*" For the purposes of the present report we are interested in describing relationships for the variables which are most important and have the greatest general interest. We have considered as unimportant those variables which have fewer statistically significant relationships than could be expected on the basis of chance alone and those whose evidence of relationship is with respect to other variables of obscure or restricted importance. Variables

that are uniquely relevant to the adoptive situation and may have little general interest are also eliminated from the present report.

The Data

Let us first review the measures for the environment which are employed in the present report. One important aspect of the child's environment concerns the child-rearing practices of the home. As described in our report, *"Interviews as a source of scores for children and their homes,"* we conducted lengthy semi-structured interviews with the children's mothers, and during the course of these interviews gathered a standard body of specific information concerning child-rearing practices. Specific questions, however, were avoided. On the basis of both statistical and psychological criteria, the various bits of information were organized into clusters which enabled us to score the interview material with respect to such phases or qualities in child rearing as eagerness on the part of the mother, general lack of sympathy toward the child, severity of toilet training, and others included in the outline (Table 1) provided below.

In addition, the interview with the mother was extended to include the values, the organization, and the general atmosphere of the home. Information relevant to these aspects of the home was gathered by our social worker also, who visited the homes as our first direct contact with the adoptive parents. This information was organized into clusters and provided the basis for cluster scores descriptive of the home per se; we refer to these cluster scores as Conditions of Child Rearing. They are included in our outline (Table 1) below.

In addition, we were able to employ measures based on simple factual information. One of these, the *Educational-Occupational Composite Score,* is defined as follows: If the adoptive father's occupation was business or professional or in the white-collar group, a weight of plus one was arbitrarily assigned. If, however, his occupation was unskilled, semiskilled, or skilled, the weight was minus one. A weight of zero was assigned in all situations where we did not know the adoptive father's occupation. The father's education was combined by allowing plus one if he had attended college, minus one if he had not attended college, and zero when we did not know what his educational background was. The mother's education was weighted in a similar manner. These three sets of weights were combined algebraically to form a general composite score representing the educational-occupational status of the home. Another score, which we consider to be an indication of the strength and stability of the home, is called the *Age–Duration of Marriage Composite Score* and is defined in the following manner: If the adoptive father was in his thirties, a weight of plus one was arbitrarily given; if he was under thirty or forty or over (5), a weight of minus one was given; if his age was unknown, a weight of zero was given. The same weighting system was used for the age of the adoptive mother. In addition, if the couple had been married seven or more years, a weight of plus one was given; if they had been married less than seven years, a weight of minus one was given; and if the duration of their marriage was unknown to us, a weight of zero was given. These three weights were combined algebraically to give us a composite measure of the age of parents and duration of their marriage.

Because of its general interest and apparent importance, we have included the

TABLE 1

A SUMMARY OF ENVIRONMENTAL VARIABLES

	Younger Sample		Older Sample	
Child-Rearing Practices Clusters (based on interview with the mother)	Eagerness	.57*	Overcontrolling	.32*
	Unsympathetic	.44	Unsympathetic	.33
	Severe Toilet Training	.44	Severe Toilet Training	.45
	Punishment for Aggression	.78	Punishment for Aggression	.82
Conditions of Child-Rearing Clusters (based on interview with the mother and on social worker's visit to the Home)	Ambition	.78	Ambition	.77
	Harmonious Family Relationships	.58	Harmonious Family Relationships	.60
	No Ambition	.72	No Ambition	.74
	Rejection of Child	.76	Rejection of Child	.68
	Parental Incompatibility	.73	Parental Incompatibility	.52
	Overprotectiveness	.77		
Compositive Scores (based on data descriptive of adoptive parents)	Educational-Occupational Composite		Educational-Occupational Composite	
	Age-Duration of Marriage Composite		Age-Duration of Marriage Composite	
Adoptive Placement	Age at adoptive placement		Age at adopitve placement	

* Split-half reliabilities for cluster scores; Spearman-Brown formula.

age of adoptive placement of the child as one of the environmental variables. These variables are all summarized in the outline in Table 1, and split-half reliabilities are provided for the cluster scores. It is suggested that the reader refer to our report, *"Interviews as a source of scores for children and their homes"* (17), which provides a detailed description of our procedure for building cluster scores.

Our efforts to secure appropriate measures for the children's development are described in detail in our preceding reports (17, 18). We employed the conventional tests for mental, scholastic, and physical development. In addition, we made numerous behavior ratings and also constructed numerous cluster scores which, it was hoped, would give us some standard estimates of personal and social aspects of the children's development. One set of cluster scores was based on an interview with the children. This interview (the Social Reaction Interview) was of a simple question-and-answer type and concerned the children's evaluation of their own behavior. Another set of cluster scores was based on the mother's description of the child and emerged from the Child-Rearing Practices interview.

The most important and the most interesting of our measures of the children's development are summarized in the outline in Table 2. Some of these, such as the intelligence tests and the scholastic achievement tests, are tried and true and known to be both reliable and valid. Many of the aspects of the child's physical development secured as a part of a pediatric-neurological examination may also be claimed to be reliable and valid, but they offered so few evidences of relationship with our environmental variables that (with the exception of one variable, a Weight Quotient found by dividing a child's weight by his age) they are excluded from our summary. Our various measures for the children's personal-social development are new and are less reliable than the tests of intelligence. Nevertheless, they have sufficient reliability to indicate the presence of relation-

TABLE 2

A SUMMARY OF THE DEVELOPMENTAL VARIABLES

Criterion	Younger Sample		Older Sample	
I. Intellectual development	Stanford-Binet IQ Arthur IQ		Stanford-Binet IQ Arthur IQ	
II. Scholastic achievement	(none relevant)		Reading Spelling Arithmetic	
III. Motor development	(no promising relationships)		(no promising relationships)	
IV. General physical development (based on neurological-pediatric examination)	Weight quotient		(no examination given)	
V. Personal-social development	Dependence on adults	.88*	Cooperation with authority	.41*
A. Child's reaction to himself—the Social Reaction Interview	Socialized compliance Takes adult role Weakness-avoidance	.70 .69 .57		
B. Mother's reaction to the child—Child-Rearing Practices Interview	Compulsive Aggressive Phobic Dependent	.52 .70 .57 .71	Aggressive Anxious Dependent Anxious-aggressive Spoiled child Controlled	.64 .56 .60 .80 .78 .78
C. Ratings made by examiners	Sensitivity to failure		Sensitivity to failure	

* Split-half reliabilities for cluster scores; Spearman-Brown formula.

ships, where definite relationships exist. Although the measures of personal-social development have the obvious handicap of uncertain reliability and of newness, they are possibly as desirable as any other currently available measures; rating procedures for relevant phases of the child's development have been provided by Baldwin (2), but his procedures were infeasible in our study of adoptive families.

Particular consideration should be given to the adoptive status of our children and their families. This circumstance has certain advantages. It makes our results directly relevant to certain child-placement practices and of immediate interest to child-placement workers. It also suggests that some of our relationships between aspects of the child's development and aspects of his environment may be independent of heredity as a confounding third variable. Our data may, therefore, add convincingly to the considerable body of evidence relevant to the importance of environmental factors in the child's development, particularly those aspects of development which are often called personal and social.

Readers will seek practical interpretations for our results. Accordingly, we must explicitly indicate certain possible sources of confounding which could lead to alternative interpretations. We have considered three major sources of possible confounding in the relationships between characteristics of the child's environment and characteristics of his development.

1. Our subjects were adoptive children living in adoptive homes. It is possible that knowledge of the true parents was a factor in the selective placement of the adoptive children; we have evidence which favors this possibility. If this knowledge of the true parents has an hereditary significance, one would expect respective hereditary attributes of the children to be correlated with any characteristics of the adoptive homes which were selected on the basis of knowledge of hereditary attributes of the true parents. For some of our trends relating characteristics of the child with character-

istics of his environment, this alternative explanation is plausible and an hereditary hypothesis is a reasonable alternative to an environmental hypothesis.[3] Other relationships involve characteristics of the environment and characteristics of the child for which no hereditary hypothesis is generally recognized; for these relations an *ad hoc* hereditary hypothesis would be particularly implausible because those who mediated the adoptions could not have had the relevant information concerning either the true parents or the subsequent practices of the adoptive parents.

2. Despite our failure to find evidence for the predictive validity of the infant examination (18), it is possible that some readers believe that the infant examination had for our criteria a predictive validity which we failed to discover. Since the infants were placed selectively as a result of the infant examination, some of the correlations between aspects of the adoptive home and aspects of the child's development could emerge as a result of the fact that both the environment (as a result of selective placement) and criteria of development (as a result of putative validity of the baby test) are correlated with the infant examination. We have conducted analyses which are relevant to this possible source of confounding. Specifically, the relationships between aspects of the environment and aspects of development which are revealed in our total group were studied in a subgroup where the infants were placed adoptively *before* the infant examination. In this subgroup, where no selective placement could have resulted from the infant examination, we still find the general pattern of relationships between aspects of the child's environment and aspects of his development.

3. As a third source of confounding, one might wonder whether some of the relationships between descriptions of the child and descriptions of the home provided by our interviews are not correlated because of their common source, either because of bias on the part of the mother or because of bias on the part of the interviewer. We have three reasons for doubting that this is an important source of confounding:

(*a*) Neither the mother nor the interviewer knew how the various bits of information were to be combined to form cluster scores and we greatly doubt if any a priori considerations would have been sufficient to yield the particular pattern of results we have.

(*b*) We find that when the descriptions of the child emerging from the psychologist's interview with the mother are correlated with the same kind of environmental information from two *different* sources, viz., the social worker's visit to the home and the psychologist's interview with the mother, the pattern of relationship is uniform and essentially unchanged. (Obviously a relationship between the child and the home is not dependent upon a common source of information.)

(*c*) The general sense of the relationships between characteristics of the home as they are known through the interview with the mother and characteristics of the child as they are known from the interview with the mother is not challenged wherever other sources of relevant information concerning the child and major objective facts concerning the home are available.

[3] A sample of adoptive children placed at random in adoptive homes could provide a basis for a conclusive test for this hypothesis.

The Correlations

Table 3 provides a summary of the correlations between the most promising criteria of the child's development and the most interesting measures of the child's environment; these data are for the younger sample. The results for the older sample are presented in Table 4. Scrutiny of these two tables reveals many similarities between them with respect to their over-all implications and provides some assurance that the trends indicated are not peculiar to one sample alone, and are not the capricious result of sampling fluctuations. As we shall note in our subsequent discussions, the implications of some of these correlations are in good agreement with the implications of relationships described by other investigators.

The absolute magnitudes of the relationships indicated by our data are relatively small. This, however, may be in part an expression of the crude nature of the variables which we were obliged to use in our exploration. The hypothesis that the intrinsic relationships suggested by our data may in truth be strong is worthy of the most serious consideration and should be explored by means of refinements in the devices we have used.

As already indicated, the reader may be concerned with the possibility of certain sources of confounding. Therefore we must point out the situations where we consider a possibility of confounding to exist and, wherever possible, we must eliminate confounding as an alternative explanation for the trends we describe.

Let us consider first those relationships where a confounding with heredity may be suspected. Heredity may be suspected as a common third variable in our relationships between criteria of development and measures of the environment when the aspect of a child's development is commonly suspected to be an hereditary expression of a comparable attribute in the parent. This is particularly important when both the environmental facets (which we have found to be correlated with this putative hereditary aspect of development) and the putative hereditary attribute of the parent could have been known by those who were involved in the adoptive placement of the infant; stated somewhat differently, an hereditary explanation for our trends may be considered in those cases where an attribute of the true parent is known by those responsible for the child's placement and where the relevant features of the adoptive family could have been known so that selective placement based on knowledge of the true parents could have occurred.

Among our measurements of development those aspects which possibly are most commonly considered to have an hereditary basis could be the Binet IQ, the Arthur IQ, and the Weight Quotient. The correlated aspects of the child's environment which might have been known by the placement workers (or could have in some way been factors in selective placement in a manner relevant to the brightness or the size of the true parents) could be expressed by the cluster scores Ambition and No Ambition and the composite scores Educational-Occupational Status and possibly Age–Duration of Marriage. The ambiguous status and the uncertain meaning of the relationships between the mental aspects of the child's development and such features of his environment are a familiar problem to psychologists. The correlations obviously describe relationships between the environment and the child's development and one may hypothesize that the relationship is an expression of

TABLE 3

A SUMMARY OF THE RELIABLE RELATIONSHIPS BETWEEN CRITERIA* FOR THE CHILD'S DEVELOPMENT AND SOME MEASURES OF HIS ENVIRONMENT

(Younger sample; $N = 114$**)

Criteria of Child's Development	Child-Rearing Practices Clusters				Conditions of Child-Rearing Clusters						Composite Scores		
	Eagerness	Unsympathetic	Severe Toilet Training	Punishment for Aggression	Ambition	Harmonious Family Relationships	No Ambition	Rejection of Child	Parental Incompatibility	Overprotectiveness	Education-Occupation Composite	Age-Duration of Marriage Composite	Age at Adoptive Placement
I. Intellectual development													
A. Stanford-Binet IQ	.20	—	—	—	.27	—	−.26	—	—	—	.31	.30	−.35
B. Arthur IQ	—	−.32	—	−.22	—	—	—	−.31	—	—	.19	.27	−.27
II. Scholastic achievement (older sample only)													
III. Motor development (no promising relationships)													
IV. General physical development													
Weight Quotient (no other promising relationships)	—	—	—	—	—	—	−.20	—	−.28	—	—	.19	—
V. Personal-social development													
A. Child's reaction to himself (Social Reaction Interview with the child)													
Dependence on adults	—	—	—	—	—	—	—	.30	—	—	—	—	—
Socialized compliance	—	—	—	—	—	—	—	—	—	—	.26	.50	—
Takes adult role	—	—	—	—	—	—	—	—	—	—	—	.32	−.50
Weakness-avoidance	−.19	—	—	—	—	—	—	—	—	—	—	.27	—
B. Mother's reaction to the child (Child-Rearing Practices Interview with the mother)													
Compulsive	—	.37	.31	—	—	−.20	—	.24	.27	—	—	—	—
Aggressive	—	.42	.36	.31	—	—	—	.24	—	—	—	—	−.24
Phobic	—	.33	.22	.23	—	—	—	.23	.24	—	—	—	—
Dependent	—	—	—	—	—	−.22	.21	—	—	.26	—	—	—
C. Ratings made by examiners (Test Reaction Scale filled in by psychologist)													
Sensitivity to Failure (no other promising relationships)	—	—	—	—	.21	—	—	—	—	—	.28	—	—

* Criteria which showed no more evidence of relationships than could be ascribed to chance were eliminated from consideration.
** r significant at the .05 level $\geq .19$; r significant at the .01 level $\geq .25$.

TABLE 4

A SUMMARY OF THE RELIABLE RELATIONSHIPS BETWEEN CRITERIA* FOR THE CHILD'S DEVELOPMENT AND SOME MEASURES OF HIS ENVIRONMENT

(Older sample; $N = 81$**)

Criteria of Child's Development	Child-Rearing Practices Clusters				Conditions of Child-Rearing Clusters					Composite Scores		
	Over-Controlling	Unsympathetic	Severe Toilet Training	Punishment for Aggression	Ambition	Harmonious Family Relationships	No Ambition	Rejection of Child	Parental Incompatibility	Education-Occupation Composite	Age-Duration of Marriage Composite	Age at Adoptive Placement
I. Intellectual development												
A. Stanford-Binet IQ	—	—	.29	.26	.25	—	—	—	—	.30	—	−.26
B. Arthur IQ	.30	—	.29	—	—	—	—	—	—	.39	—	−.37
II. Scholastic achievement												
Reading	—	.22	—	—	—	—	—	—	—	—	—	−.25
Spelling	—	—	—	—	—	—	—	—	—	—	—	−.58
Arithmetic	—	.22	—	—	—	—	—	—	—	—	—	—
III. Motor development (no promising relationships)												
IV. General physical development (younger sample only)												
V. Personal-social development												
A. Child's reaction to himself (Social Reaction Interview with the child)												
Cooperation with Authority (no other promising relationships)	—	—	—	−.27	—	—	—	—	—	—	—	—
B. Mother's reaction to the child (Child-Rearing Practices Interview with the mother)												
Aggressive	—	.25	.30	.26	—	—	−.28	.31	—	—	—	—
Anxious	—	.35	.42	—	—	—	—	.41	—	—	—	—
Dependent	.24	—	—	—	—	—	—	—	−.34	—	—	—
Anxious-aggressive	—	.27	.36	.33	—	—	−.27	.36	.36	—	—	—
Spoiled child	—	—	—	.42	—	—	—	—	—	—	—	—
Controlled	—	—	−.31	—	—	—	—	−.29	—	—	—	—
C. Ratings made by examiners (Test Reaction Scale filled in by psychologist)												
Sensitivity to Failure (no other promising relationships)	—	—	—	—	.24	—	—	—	—	—	—	—

* Criteria which showed no more evidence of relationships than could be ascribed to chance were eliminated from consideration.

** r significant at the .05 level $\geq .22$; r significant at the .01 level $\geq .29$.

differences in environment per se. One may also hypothesize that the relationships are an expression of the fact that the differences in the environment are organized, i.e., selected on the basis of differences in the true parents, and that the relationship between the environment and aspects of development is but an indirect expression of an intrinsic relationship of an hereditary nature between the true parents and the adoptive children. In keeping with this hypothesis, we have found significant relationships between the educational-occupational composite score for the true parents and the educational-occupational score for the adoptive parents (it would appear that some selective placement based on knowledge of the true parents had occurred). In addition, we have found significant relationships between the educational-occupational scores of the true parents and the Binet IQ's of the children.

This pattern of relationships is equally consistent with either an environmental hypothesis or an hereditary hypothesis. Does the correlation between the true parents' educational-occupational status and the child's Binet IQ occur merely as an incident to the fact that knowledge of the true parents had something to do with the adoptive placement (i.e., an environmental pattern which may have influenced Binet IQ) of the children? Does the correlation between the environmental factors and the Binet IQ of the children occur merely as an accident of the fact that selective adoptive placement was based in part on such knowledge of the true parents as their educational-occupational status (which in the opinion of some readers may express the kind of hereditary difference which may also find expression in Binet IQ)?

Wherever obvious possible sources of confounding may be discarded, the relationships are much more provocative both from the practical and from the theoretical point of view than where the possibility of confounding is obvious but not subject to evaluation. It will be noted in Tables 3 and 4 that we have employed our *total* younger sample and our *total* older sample in showing the relationships between the most promising criteria of development and the most promising measures for the environment. The reader may recall from our study of the validity of the infant examination (18) that in one of the subgroups of children, where the infant examination seemed to be most satisfactory to the examiner, there was indication that the infants were placed in their adoptive homes selectively so that correlations between the infant examination and certain aspects of the adoptive homes emerged. The aspects of the adoptive homes which seemed to have been selected partly on the basis of the infant examination included the Ambition cluster score, the No Ambition cluster score, the Educational-Occupational composite score for the adoptive parents, and the Age–Duration of Marriage composite score for the adoptive parents. In Tables 3 and 4 it may be noted that those aspects of the environment are correlated with the Binet IQ and that the two composite scores also show some relationship with the Arthur IQ. If (despite our failure to find any indication that the infant examination is predictive of either the Binet or the Arthur) the reader continues to believe that some important relationship nevertheless exists, he might suspect that the relationships between the Binet and those aspects of the environment are but artifacts. Specifically, he might suspect that the relationship between the Binet and these as-

TABLE 5

CORRELATIONS BETWEEN MENTAL ABILITY AND CERTAIN ASPECTS OF THE ENVIRONMENT WHICH WERE SELECTED ON THE BASIS OF THE INFANT EXAMINATION; A COMPARISON BETWEEN THE TOTAL YOUNGER GROUP OF 114 AND A SUBGROUP OF 32 PLACED ADOPTIVELY BEFORE THE INFANT EXAMINATION

Test	Group	Cluster Scores		Composite Scores	
		Ambition	No Ambition	Education-Occupation	Age-Duration of Marriage
Binet IQ	Total younger group	.27	−.26	.31	.39
	Selected-before subgroup	.36	−.36	.28	.28
Arthur IQ	Total younger group	—	—	.19	.27
	Selected-before subgroup	—	—	.25	.12

pects of the environment emerge from the fact that both the Binet and the environmental variables are correlated with the infant examination. Although we consider this possibility to be extraordinarily unlikely, readers of this persuasion will be interested in the correlations for a sample of children who were placed in their adoptive homes *before* they received an infant examination and for whom there could be no possible confounding between the infant examination and the environment of the adoptive homes. We refer to this special group where no selective placement based on the infant examination could occur as the "selected-before group." In Table 5 comparisons are provided between the correlations for this selected *before* group and the *total* group. This comparison is conducted for the younger sample only, because the "selected-before group" for the older sample was quite small. It will be seen that the correlations between the aspects of the environment and the IQ's are essentially the same for the selected-before group as they are for the total group. It is obvious that such correlations between aspects of the child's development and aspects of his environment are not dependent upon confounding with the infant examination.

It is of incidental interest that such comparisons were made for all of the correlations between aspects of environment and the various criteria of development, and the essential similarity of relationships was observed.

Since the families in which the adoption was mediated by the agencies were reached by us through the agencies, one might suspect that this possible selective influence in our follow-up could have influenced the relationships revealed by our data; i.e., one might suspect that the agencies would be more successful in helping us reach those homes where there was a "correspondence" between the home and the child than where there was not. Since our children who were placed adoptively before an infant examination were almost entirely independent placements, the data for this group provide an incidental control (see Table 5). The relationships between the environmental aspects and the developmental aspects are essentially the same for the group placed before the infant examination as they are for the total group. Other specific analyses between groups placed independently and groups placed by agencies show that in *both* groups relationships between aspects of the environment and aspects of development emerge. Although the agencies may

have some selective influence in our follow-up (see the description of our sample in the preceding monograph [18]), this influence is not necessary for the trends and relationships we describe.

In the preceding section we also recognized the possibility that some of the relationships between characteristics of the child based on the mother's description and characteristics of the home conceivably could be confounded either because the mother was a common source for much of these data or because the data emerged from a given interview and could have been biased by the interviewer. Since neither the mother nor the interviewer knew how the various bits of data were to be combined in order to form cluster scores, it seems improbable that our relationships are the result of bias. Fortunately, it is possible for us to show that some of the relationships between aspects of the environment and aspects of the child's personal-social development are not necessarily dependent upon bias. For example, some of the items of the Rejective cluster score were gathered by the social worker at the time of her visit to the home and the same items were gathered also by the psychologist at the time of her interview with the mother. Despite the fact that these bits of information were gathered by different people at different times and in different contexts, the limited Rejective cluster scores from these two sources are correlated to the order of .60; both the limited Rejective cluster score based on the psychologist's data alone and the identical limited Rejective cluster score based on the social worker's data alone show the same pattern of relationships with the Compulsive, Aggressive, and Phobic cluster scores for the child. (The general sense of these correlations is indicated in Tables 3 and 4.) These particular correlations at least are not dependent upon bias or confounding at the source of the data.

The over-all pattern of the relationships which are described in Tables 3, 4, and 5 does not require us to conclude that any of the obvious sources of confounding are necessary for our relationships. We are therefore inclined to consider most seriously the possibility that these correlations indicate that the environment may play some kind of facilitating or delimiting role in the aspects of child development which we have studied. Certainly our data are in no sense a proof of this environmental hypothesis, but in view of its great practical implications for parents, child-placement workers, and others interested in the development of children, it is a hypothesis which should be most seriously considered by the skeptical and should provide some encouragement to those who employ environmental considerations when explaining, anticipating, or planning for the development of children. Nevertheless, it would be premature to reject alternative hypotheses for the observed relationships, and at least for some of our relationships alternative hypotheses are clearly possible. For example, the relationships between the measures of mental ability and our measures of the home which are indicative of socioeconomic status could very well express a confounding with hereditary influences resulting from selective placement of the infant based on knowledge of the true parents. In addition, it is possible that some confounding of the bias of the mothers or the bias of the interviewer is involved in the relationships between child-rearing practices of the home as described by the mother and the characteristics of the child as described by the mother. It should be obvious to the

reader, however, that the possibility of confounding in these relationships is not clear *evidence* for confounding, and should not deter us from a serious consideration of the possible practical implications of these relationships.

It is of interest to note that there are several relationships described in Tables 3 and 4 which appear to be independent of any plausible confounding of sources of data. For example, we have no reason for considering the confounding of source of data hypothesis as an explanation for the correlations between the cluster scores based on the child's Social Reaction Interview and any of our measures for the environment. Moreover, we do not have any confounding hypothesis for the relationship between Sensitivity to Failure on the part of the child and Ambition on the part of the adoptive parent. We believe that our analyses eliminate any obvious confounding hypothesis for the relationships between the Rejective cluster score and the various aspects of the child's development. We have no confounding explanation for the suggestion that rejective, unsympathetic, and punishing influences may detract from Arthur IQ in our younger sample. With respect to the age-of-adoptive-placement variable, we see no reason for using a confounding hypothesis for the various relationships involved in aspects of the child's development. It should be unnecessary to add, however, that age of adoptive placement per se is not a very obvious explanatory concept; nevertheless it seems quite possible that environmental differences associated with age of adoptive placement may very well have the importance implied by the correlations offered in Tables 3 and 4.

The reader may be concerned with the fact that although the correlations for the younger and the older samples in general may be seen as mutually confirmatory, there are some relationships which are not confirmed. We believe that the discrepancies between the results for the two samples may be explained in terms of the differences in age of the two samples and the difference in the circumstances which accompany differences in age. There were also some slight changes in the placement practices of agencies which could contribute to differences in the two age groups.

Discussion

The correlations that have been described require further discussion. As we shall see, such a discussion is most fruitful when it is based on a brief survey of the relevant data provided by the psychological literature. In the following paragraphs we shall present a terse description of studies which are most conspicuous from the standpoint of rigor and sample size. This survey is not intended to be exhaustive, but it should serve both to confirm our empirical findings and to help us interpret them. The studies presented first have to do with mental ability, and it will be seen that the investigators, like us, are involved with the possibility that the relationship between measures of mental ability and aspects of the environment are in some manner confounded with heredity.

In the published studies describing the relationship between aspects of the child's personal-social development and aspects of his environment, the children are all living with their true parents and the question of whether or not the relationships are confounded with common heredity need not be raised because this possibility of confounding is so conspicuous.

Since it seems to us particularly improbable that heredity could be a hidden

third variable to account for the relationships we have observed between various aspects of the child's environment and various aspects of his personal-social development, we are greatly interested in the possibility that the reports of others, where this confounding could have occurred, are in general confirmed by our data. If our data, where hereditary confounding seems particularly improbable, confirms the implications of these other studies, we may be increasingly confident that the environmental implications of the studies of others concerning the child's personal-social development are not necessarily an indirect expression of hereditary influences.

Any congruence between the implications of our investigation and of the investigations of others with respect to the personal-social development of children has an additional significance for our investigation. In some parts of our investigation, we may suspect that bias of the mother may have produced part of the correlation between the child-rearing practices of the mother and her description of the child. If the implications of our data are consistent with the implications of the data provided by other investigators where this particular source of confounding is improbable, we may place added confidence in that portion of our results where we might fear that the mother's bias is a possible source of our relationships.

Let us proceed with our review. In 1928 Barbara Burks published a report that revealed relationship between the intelligence of foster children and the cultural index of the foster home (6). Her study showed evidence of relationship between the child's IQ and each of the following: family income, home ownership, number of books in child's library, and the amount of home instruction given the child. Although the correlation coefficients are not sufficiently high to provide a useful basis for prediction, they are sufficient to suggest strongly that the opportunities and the stimulations provided by a child's environment may have a role in his mental development.

In 1935 Alice Leahy published a report which was similar to Burks' with respect to design, purpose, and implications (10). It should be pointed out that in both these studies there is indication that the mental ability and intellectual and other attainments of the foster parents bear a relationship with the mental ability of the foster child. It must be considered, of course, that the children may have been placed selectively in the foster homes. As a matter of fact, this is probable because, in general, persons responsible for adoptive placement attempt to match the expectations of the adoptive families with the developmental promise of the adoptive child.

The probability of such relationships as these being solely due to selective placement is reduced by several analyses described by Freeman in 1928 (7). He showed that adoptive siblings who had been reared apart were correlated in intelligence to the order of .25, whereas other investigators have found that the intelligence of siblings living together is about .50. This reduction in sibling resemblance could be taken as indication that an important part of the similarity between siblings is due to a similarity in their environments. In addition, Freeman also reports that where there are relatively great differences in the cultural rating for the foster home, the correlation between pairs of separated siblings with respect to intelligence is only .19, whereas if pairs of separated siblings went into foster homes which were similar to each other with respect to cultural rating, the correlation between such pairs of siblings was .50. The disparity in intelligence that differences in environment may produce (i.e., environmental differences as introduced in Freeman's groups of siblings placed in separate foster homes) is particularly impressive evidence for the importance of environment in the development of mental ability. This appears especially probable when it is noted that for the most part Freeman's children spent several early years living together in their original home. As a complement for this analysis, Freeman also examined the correlation between the intelligence test scores for 72 pairs of unrelated foster children who were living in the same foster home. The correlation for these unrelated foster siblings who had a common home environment was .37.

In 1931 Sims (15) reported a study which has implications very similar to those provided by Freeman's analyses. He formed 203 pairs of children who were unrelated but who were living in homes matched with respect to socioeconomic status as measured by the Sims Score Card (and matched with respect to certain other factors not directly relevant to our present interests).

The correlation betwen IQ's for these 203 pairs of unrelated children was .35, i.e., unrelated children who have similar homes tend to have similar IQ's.

In both Freeman's and Sims' studies it is possible that the children in the same homes were selected in some manner so that their "heredity" was similar, and that Freeman's correlation of .37 and Sims' correlation of .35 should be ascribed to similar environment plus similar heredity. From the practical standpoint, however, we do not know that the heredity was similar. Nevertheless, we do know of some similarity in the environments.

Thus we see that, at least with respect to measured mental ability, environment appears to be an important correlate (the actual determiner is unknown). As may be inferred from the preceding paragraphs, it has not been difficult for investigators to show evidence of relationship between mental ability and facets of the socioeconomic and educational attainments of the child's home. The possibility of showing such relationships is obviously greatly favored by the availability of reliable measures of the mental ability of children. Similarly, some of the aspects of homes where primarily mental attainments are emphasized may be specified rather objectively. In addition, relatively satisfactory measures of the socioeconomic status of homes have been available for a number of different kinds of investigations. Accordingly, it is not surprising that a reliable relationship between the mental ability of the child and some characteristics of the home could be revealed.

With respect to the features of the child's behavior which are often described under the general heading of character, temperament, personality, or adjustment, the research reports often leave much to be desired. Nevertheless, there is a large literature which offers consistent support for a general hypothesis that there are important relationships between a child's personality and his environment (particularly the environment which comprises the reaction of his parents toward him). Although the published reports corroborate this principle, their content is diversified and as a consequence there are not many which are mutually corroborative in specific respects. This is almost a necessary consequence of the fact that innumerable facets of a child's personality may be of interest to investigators and almost countless aspects of the child's environment may also be the subject of investigators' interests. For this reason the probability of studies overlapping greatly is not large and consequently the possibility of independent corroborative studies is small. Since neither the most relevant aspects of the child's personality nor the most relevant aspects of a child's environment is a matter of general agreement, devices for measurement which are well developed and generally understood have not yet emerged in this area of inquiry. As a matter of fact suitable indices of a child's personality or of his interpersonal environment are relatively rare. Many of the devices that have been employed are of uncertain reliability, have a meaning which is unique to some special application, or appear to be so heterogeneous in content as to have no specifiable implications. Despite the handicap of great diversity of interest among investigators and of our general impoverishment from the standpoint of measuring devices, studies have emerged which as a group have strongly compelling implications for the importance of the environment as a possible factor in the adjustment of the child.

Only a small and relatively new literature for this field has the merit of usefully large samples, specifiable procedures, and suitable consideration for control. Fortunately, however, the small

scientific and directly relevant literature exists in the context of a huge clinical, anecdotal-speculative, or analogical-experimental literature which in its implication is in general agreement with the more scientific applicable literature. In the following paragraphs a few of the more systematic studies will be mentioned briefly. Perhaps it will be of some interest to the reader if we present the selected studies in the order of their publication.

One of the earliest studies to attract our interest serves as a transition from our foregoing emphasis on intellectual factors to an emphasis on the relationship between interpersonal aspects of a child's environment and the child's personal development. In 1933 David Levy described an investigation wherein eight conspicuously overprotected children were compared with other children on the basis of scholastic achievement (12). In brief he found that the overprotected children were up to standard or possibly accelerated with respect to reading, but were substantially retarded in arithmetic. This difference is simply and plausibly explained in terms of features of the home environment of the overprotected children.

In some cases, data which have been secured in a remote context provide analyses which are of direct interest to our problem. For example, in 1934 Goodwin Watson described an analysis of the responses of graduate students to a questionnaire that had to do with the strictness of the student's home training and with some of the student's personal characteristics (16). It was revealed that students who described strict practices by their parents also reported numerous characteristic tendencies for themselves. Among these were tendencies to be ashamed of their parents, to hold grudges, and to feel that people had been unfair to them. They described in themselves a tendency to be bashful, picky about food, and curious about sexual matters. They also tended to worry. The foregoing tendencies were less characteristic of the graduate students whose responses indicated that the home training was lax. In general this report suggests that strict home training may be associated with the development of aggressive reactions and attitudes, by the development of anxiety characteristics, and by compulsive and dependent manifestations.

In 1936 Newell examined the record of 75 clinic cases of maternal rejection and compared these cases with 82 nonclinic cases (13). Although his methods of description are more verbal than quantitative, he concludes that if parental rejection is expressed by hostile handling of children, the children tend to be aggressive; expression of parental rejection by consistently protective parental handling was associated with submissive behavior on the part of the children. Newell also points out that the rejective attitudes of the mothers were associated with, and possibly caused by, an unhappy attitude toward marriage.

One of the most extensive studies of relations between the behavior of young children and characteristics of the home was published in 1936 by LaBerta Hattwick (8). Her data for the children's behavior comprised ratings based on several teachers' composite evaluations; ratings on home factors were based on the judgment of one teacher who referred to school conferences with parents and to a home visit. The analysis employed a large number of children drawn from 18 different nursery schools. Tetrachoric correlations were determined between a large number of different types of preschool behavior and 11 different ratings for the home. For the most part the ratings concerning the home were descriptive primarily of parental behavior which would be relevant for the child. The analyses show more promising correlations than could be explained plausibly on the basis of chance, and the behavior patterns implied by the major correlations are for the most part quite plausible. From numerous specific relationships she concludes that overattentive homes tend to produce children who display infantile and withdrawing reactions, and she shows that there is some tendency for neglectful homes to have children who are aggressive. In addition, there is indication that calm, happy homes produce children who are cooperative, and that impatient quarrelsome homes tend to be characterized by children who show uncooperative behavior.

Dorothy Baruch and J. Annie Wilcox describe an analysis of the relationships between ratings of the goodness of a child's adjustment (primarily interpersonal) and kinds of interparent tensions. This was in 1944 (3). The subjects comprised 76 preschool children and their parents. Intellectually the children and the parents were described as a superior group and participation in the study was dependent upon the parent's interest. The data were derived from observations of the child and interviews with the parents. One of the most important factors in the goodness of the children's adjustment was the absence of tension in the parents' sexual behavior; apparently, dissatisfaction concerning the sexual act indirectly contributed to an important degree to unsatisfactory adjustment in children. Lack of consideration of one spouse for another also contributed to unsatisfactory adjustment in

the children, as did unsatisfactory expression of affection between spouses. Thus in general we see that inharmonious or incompatible parents appear to contribute to the adjustment problems of the children.

In 1945 Katherine Read published an account of an analysis which indicated that mothers who expressed approval of liberalism or freedom in the control of children had children whose behavior as measured by the Read-Conrad Inventory was relatively desirable (14). The mothers who approved of strict parental control had children whose behavior was indicated as unfavorable by the Read-Conrad Inventory. The mothers' attitudes were secured by means of a questionnaire whereas the children's behavior was rated by several nursery school teachers.

Although we shall generally avoid an employment of the case history material in our present discussion of the background for our problem, the implications of Watson's and of Read's study provide interesting corroboration in a clinical report of Edith Jackson published in 1947 (9). She describes three cases where strict discipline in early childhood was followed by the development of reactions that could be described as fearful, demanding, and aggressive.

Baldwin, Kalhorn, and Breese, in their 1945 monograph on the patterns of parent behavior (1), present interesting data which is consistent in its implications with trends reported by other investigators. They describe relationships between their parent behavior rating scales (used by social workers in visits to the home) and several characteristics of young school children. Among the numerous findings reported is an interesting relationship between parental rejection and nonconformist attitudes on the part of the children.

It is interesting to note that the tangible reports based upon systematic studies of practical behavior frequently draw the reader's attention to the importance of "democratic" home policies. "Reasonable" control policies appear to be important in assisting the child to become a well-socialized person who can live comfortably with others. Apparently arbitrariness on the part of the parents, or lack of sympathy and understanding, is conducive to the development of negative and destructive reactions on the part of the child.

In 1951 Barbara Bishop described a study based on 34 mothers and their preschool children (4). This report is based on systematic observations of mother-child interaction. The mothers were described with respect to such categories as lack of contact, directing, criticizing, and noncooperation. The child's behavior was categorized with respect to bid for attention, noncooperation, asking for information, and asking for help. Numerous correlations were reported which were not only statistically significant but which were often in the fifties and the sixties. Although these correlations can scarcely be taken as an evidence that long term patterns of child behavior are associated with important patterns of parental response, this report illustrates nicely that in many given situations an important correspondence exists between the behavior of mothers and the behavior of children.

An unpublished doctoral dissertation by Gerald Lesser describes a well-designed analysis based on (associates' judgment of) the behavior of 44 boys and the child-rearing practices of their mothers (as evaluated by an interview) (11). He reports that rejection by the mother is associated with overt aggression on the part of the child. He also finds that parents who advise aggressive activity have overtly aggressive children and that where aggression is strongly discouraged by the parents overt aggression on the part of the child is reduced.

Although not one of the foregoing references is likely to be regarded as compelling evidence for the importance of the environment in the development of the child's personality, each of them contributes to the plausibility of such a conclusion. For the most part, the samples were small and the measuring devices were not well standardized. In addition, there is little specific replication in content and methodology. Nevertheless, this stream of evidence continuing for the last 20 years has established an important pattern in our beliefs concerning the socialization of the individual. Some of the analyses, like those of Bishop (4), provide us with a kind of "laboratory exhibit" of the interactions which characterize the everyday existence of mother and child. This study obviously cannot be used as an indication of the long-term course of the child's development; it does illustrate however, that there is a systematic action and reaction, and they suggest descriptive components of the circumstances wherein interpersonal habits of the child may be formed in consequence of the pressures and requirements of the mother.

Despite their diversity, the studies of Watson (16), Newell (13), Hattwick (8), Baruch (3) Read (14), and Lesser (11) all suggest strongly that frustration of the child by neglect or harsh treatment evokes in him characteristic destructive responses and fearful attitudes.

Watson's study (16) indicates that strict parents may have more than their share of children whose conspicuous characteristics include aggression and anxiety. If relatively high scores on our Unsympathetic, Severe Toilet Training, and Punishment for Aggression cluster scores are indications of strictness on the part of the parents, it may be seen that the relations shown in Tables 1 and 2 are consistent with this part of Watson's study. Newell's study (13) seems to have similar implications and specifically indicates that hostile rejection on the part of the parents is associated with aggression on the part of the children. We find evidence of this in both our younger and older samples. Newell also points out that the rejective attitude of the mother may be caused by the unhappy attitude toward her marriage. We found (17) that rejective conditions in the home were inversely related with Harmonious Family Relationships and positively related with Parental Incompatability; this is true for both the younger and the older samples. All of this, incidentally, is in agreement with the implications of the study by Baruch and Wilcox (3). It is of interest to note that Baldwin, Kalhorn, and Breese (2) provide evidence of relationships between parental rejection and nonconformist attitudes on the part of the children. Lesser (11) also indicates that rejective mothers have aggressive children.

Consistencies between our report and other published reports could be shown in numerous detailed respects, but we are most interested in the broad implications of these investigations. In general, they strongly suggest that inharmonious, incompatible homes are likely to be rejective, and that such rejective homes are characterized by children who are fearful and aggressive. We believe that our study provides an important confirmation of the implications of these published studies. We have shown the pattern of relationships with respect to a wide constellation of variables, and the nature of our sample makes it seem particularly probable that such relationships (between aspects of the home and certain personal-social attributes of the children) as these are not a product of confounding with hereditary (i.e., we have no reason for believing in our sample that the particular relevant knowledge of the true parent and the particular relevant knowledge of the adoptive parent was consistently available to the agencies and systematically employed by them as a basis for selective placement of adoptive infants). It would seem, therefore, that if the agencies wish to reduce the possibility of creating adoptive homes where the child is fearful and aggressive, when they evaluate candidates they should be particularly interested in the harmony of the home, the compatibility of the spouses, and the improbability of the parents being rejective, even in times of disharmony or distress.

Summary

We have explored relationships between various aspects of the children's development and various aspects of their environment for two samples. The younger sample comprised 114 children who were in their fifth or sixth year of life and not yet in the first grade. The older sample of 81 children was past the first grade and not yet pre-adolescent; 70 per cent of these children were in their eighth or ninth year of life. The measures of the children's development which we used included intelligence tests, scholastic achievement tests, measures of growth, and numerous facets of personal-social development. Among these facets of per-

sonal-social development are included the child's statement of his own behavior, the adoptive mother's description of the child's behavior, and examiners' ratings. Some of our measures of the child's development are tried and true; others are novel and untried.

Our measures of the environment were descriptive of the values and status of the adoptive home. Descriptions of the child-rearing practices of the adoptive parents were also available.

The results presented are in many respects similar for both the older and younger samples and lead us to believe that they are not the capricious result of sampling fluctuations.

In presenting the findings we have taken pains to draw the reader's attention to possible sources of confounding. Although the possibility that confounding could exist is no evidence that it did exist, we wish to remind the reader of the possibility, because our results have numerous practical implications and strongly suggest that differences in the environment may find expression in differences in the child's development, and this possibility seems particularly strong for the relationships where we can think of no plausible source of confounding which could detract from the environmental implications of our trends.

The relationships described by this study are not particularly strong and if, as we suspect, many are an expression of the formative role of the environmental differences, we would suggest that they should not be taken as indications of the possible maximal importance of these environmental differences. Because of obvious imperfections in our measures, we believe that the importance of the environment, predictive or causative, may be much greater than indicated by our correlations. For example, the correlation between phobic reactions in the child and unsympathetic child-rearing practices was .33 in our younger sample; neither of these variables is particularly reliable, however, and if such a relationship were examined by the use of reliable measure one might find a practically important relationship (when the well-known correction for attenuation is applied to this correlation of .33, it is raised to .66; when the correlation of .35 between unsympathetic child-rearing practices and anxious reactions in the older children is corrected for attenuation, an estimated correlation of .80 emerges).

Our study was designed as an exploration of possible relationships and was not committed to causal explanation of the relationships. Nevertheless, no plausible alternative explanations (e.g., confounding) are available for many of our relationships, and from these relationships certain important practical implications emerge. One implication is worthy of particular emphasis: inharmonious, incompatible, and rejective adoptive parents may tend to produce children who are aggressive and fearful.

General Summary

The present report is the third in a series of three monographs: "Interviews as a source of scores for children and their homes" (17), "The predictive validity of the Yale Developmental Examination of Infant Behavior" (18), and "Relationships between some aspects of development and some aspects of environment for adoptive children." These monographs describe three successive phases of a program of research which was designed to provide answers for two questions:

1. How accurately and in what respects can the Yale Developmental Examination of infant behavior be employed to

predict future development for adoptive children?

2. What characteristics of adoptive homes (placements) may be shown to be correlated with characteristics of adoptive children?

Since the subjects for our investigation were adopted children and adoptive parents, certain limitations were imposed upon us. Adoptive families have a special status in our society and an investigation of the children and the child-rearing practices of such families involves special limitations and restrictions; it was necessary for us to plan an investigation which involved a minimum of threat and inconvenience for the cooperating adoptive families. In addition, it was necessary for us to devise procedures for evaluating adoptive children and their homes. However, the desirability of our providing special instruments for evaluation and measurement is not entirely due to the adoptive status of our subjects. There is a conspicuous dearth of practicable, time-tested procedures for evaluating the status of young children and for evaluating the values and the child-rearing practices of the home. Our efforts in this direction are described in the first section of this report.

Since our subjects were voluntary participants and since most of them were recruited with the help of the agencies who mediated the adoptive placements, there were some selective possibilities in our sample which had to be considered. The selective possibility that one might fear most is that the children included in our follow-up study were in some respects different as infants from those whom we were unable to include. Using the various parts of the infant examination as a basis for comparisons, we found no evidence for such a possibility. The indications available to us suggest that any differences between the families we saw and those we did not see were not due to the child per se but could represent the attitudes of the families toward the Yale Clinic of Child Development or toward the child-placement agencies.

In our exploration of the predictive validity of the infant examination (18), we used many different criteria of the child's development and all different aspects of the infant examination. Nevertheless, we failed to find evidence that the infant examination had a useful predictive validity. It should be emphasized that we examined the predictive validity of all the various facets of the infant examination and that we employed all feasible criteria of development for the adoptive children. Our criteria included the usual measures of mental and scholastic development, the various parts of a standard pediatric-neurological examination, and numerous scores and ratings descriptive of the child's personal and social development. These scores included the child's report on his own behavior, the adoptive mother's description of his behavior, and ratings made by the examiners.

Although we found no evidence for a useful degree of predictive validity and, therefore, cannot refute the hypothesis that the infant examination has no predictive validity, our results should not be taken as positive proof of this hypothesis. It is possible that, had we used some other criteria or had we used an older sample of children, some evidence of predictive validity could have emerged. Nevertheless, we did make a comprehensive effort to find evidence of predictive validity and we failed to find it. Other investigators using measures of mental ability alone have failed similarly to find evidence of predictive validity for infant examinations. It would seem,

therefore, that those who strongly believe that the infant examination has predictive validity should now assume some responsibility for providing systematic data which indicate the nature, if not the degree, of such predictive value.

It should be remembered, however, that we have examined the predictive validity of an *infant* examination. All of the children who were included in our study had received an infant examination before they were 14 months of age. It should also be noted that the children who participated in our study were brought to the Yale Clinic of Child Development for evaluation in connection with their adoption or candidacy for adoption. Children who were grossly ill or obviously handicapped were seen at the Clinic in great numbers, but not as adoptive candidates. We have not sought to evaluate the use of the infant examination as a diagnostic aid for the evaluation of ill or handicapped children; our validative study is not concerned with the general value of the infant examination procedure as a device for evaluating the developmental status of an infant at any one time. We have been concerned with the predictive validity of the infant examination for infants who are possible candidates for adoption, and our results should not be generalized to other problems or situations, particularly of a medical nature, where the current evaluation or diagnosis of an infant is desired.

In this, our third monograph, are described some relationships between various aspects of the child's development and various aspects of his environment. There are descriptions of numerous interesting relationships, but our study, like others, provides no certain causal explanation for them. The analyses strongly suggest, however, that the child's environment may provide opportunities and limitations which result in differences in a child's development. This is not a novel indication, but our results are novel in that they provide evidence of such relationships in respects which have not heretofore been systematically described, and provide evidence for samples of children who are living in adoptive homes and are not biologically related to their parents. This suggests that some of the relationships between aspects of the child's development and aspects of his environment should be independent of an hereditary explanation, and therefore points definitely toward the importance of environmental differences as a factor in the development of personal-social differences in children.

Here we have considered various sources of confounding which might qualify the value of the environmental hypothesis in describing the relationships. It is acknowledged that some of the relationships could have arisen as a result of confounding with hereditary differences. Specifically, knowledge of some of the attainments of the true parents was available for many of the adoptive infants and we have evidence that this knowledge was used selectively in placing the infants in their adoptive homes. If such knowledge of the true parents as their educational-occupational status expresses hereditary differences, then it is possible that the correlated characteristics of the adoptive parent could show a relationship with aspects of the child's development, such as Binet IQ, as a result of confounding with heredity. We have no means of evaluating such an alternative hypothesis for some of the results. For many of our results, however, the relationship between characteristics of adoptive parents and characteristics of adoptive children could scarcely be described as a confounding with heredity.

In the first place, it is highly improbable that the necessary knowledge of the true parents' characteristics and of the environment to be provided by the adoptive applicants could have been known by the placement workers or could have had a role in the selective placement of the infants. In addition, it is improbable that the selective placement which would be required by our relationships could have occurred had such knowledge been available: the necessary beliefs concerning heredity are not sufficiently specific and we suspect that only *post hoc* hereditary hypotheses could be presented to describe many of our results.

In our study of the relationships between children's development and their environment, we have considered other sources of confounding, such as some hidden predictive value of the infant examination, and such as some systematic bias on the part of the mothers or on the part of our interviewers. For many of our relationships we can show that such sources of confounding are very implausible, indeed. It should be noted, however, that in those instances where the confounding hypothesis remains unchallenged, it cannot be claimed to be true, and that even for those possible instances one must consider the practical implications of the importance suggested by our data for the environmental differences.

It should be emphasized that our data provide numerous relationships for which no confounding hypothesis can be offered. For the most part, these relationships are suggestive of environmental sources or circumstances which influence the personal-social aspects of the child's development.

In general, it seems that our total study has two broadly practical implications. First, it offers no encouragement to those who would depend upon an *infant* examination as a basis for anticipating the subsequent development of adoptive children. Second, it strongly suggests that many aspects of the development of children, particularly those we might call personal or social, emerge at least in part as a result of differences in the child's environment, particularly those differences which have to do with the values of the home and its child-rearing practices. From these two general results, one might suspect (if one desires to maximize the possibility of certain patterns of development in adoptive children) that much of the effort commonly devoted to an exact evaluation of infants considered for adoption could more profitably be devoted to a study of the applicants who desire to be adoptive parents. With respect to the welfare of the adoptive children and adoptive families, our data suggest that additional research would provide the basis for some training of adoptive applicants and of adoptive parents in certain aspects of child rearing. This, however, is for the future. For the present it is hoped that our exploration will encourage others in their efforts to devise and validate sound instructional procedures for those who desire to create homes where children are friendly, confident, and have good ability.

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